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CONTINUATION OF THE
BULLETIN OF THE NUTTALL ORNITHOLOGICAL CLUB

New
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Vol. XXXVII

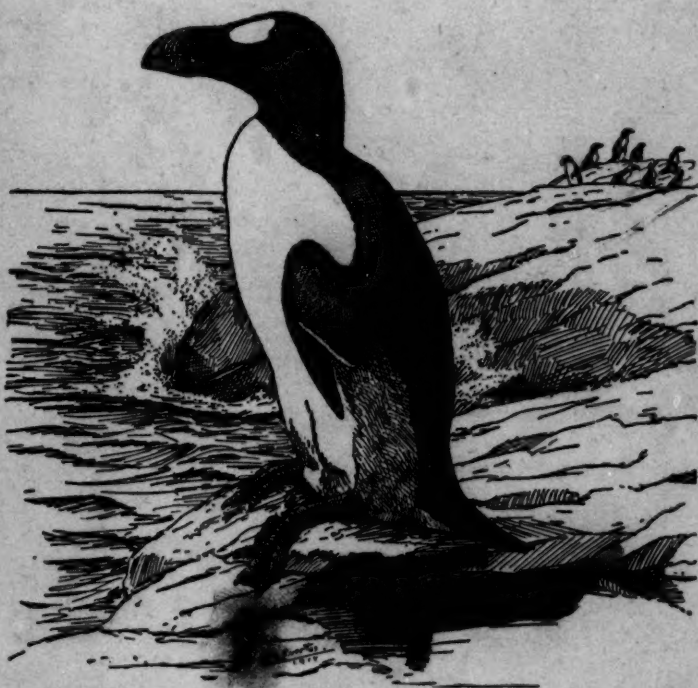
The Auk

A Quarterly Journal of Ornithology

Vol. XXXVII

OCTOBER, 1920

No. 4



PUBLISHED BY

The American Ornithologists' Union

LANCASTER, PA.

Entered as second-class mail matter in the Post Office at Lancaster, Pa

CONTENTS

LIMCOLINE VOICES. By John Treadwell Nichols	519
SUMMER BIRD RECORDS FROM LAKE COUNTY, MINNESOTA. By Charles Eugene Johnson	541
IN THE HAUNTS OF CAIRNS' WARBLER. By C. W. G. Eifrig	551
PATTERN DEVELOPMENT IN TEAL. By Glover M. Allen	558
NOTES ON THE BIRDS OF SOUTHEASTERN NORTH CAROLINA. By Edward Fleisher	565
MIGRATION AND PHYSICAL PROPORTIONS. A PRELIMINARY STUDY. By C. K. Averill	572
<p>GENERAL NOTES.—Roseate Tern (<i>Sterna dougalli</i>) Breeding in Virginia, 579; Egret in South Orleans, Mass., 579; The Louisiana Heron (<i>Hydranassa tricolor ruficollis</i>) at Cape May, N. J., 580; The Marbled Godwit (<i>Limosa fedoa</i>) on the New Jersey Coast, 580; Marbled Godwit on Long Island, N. Y., 581; The Willet (<i>Caloptrophorus semipalmatus semipalmatus</i>) in Nova Scotia, 581; The Willet in Nova Scotia, 582; Breeding of the Semipalmated Plover (<i>Aegialitis semipalmata</i>) in Yarmouth County, Nova Scotia, 583; The Cowbird's Whistle, 584; Dance of the Purple Finch, 584; Breeding of the Evening Grosbeak in Manitoba, 585; A Change in the Nesting Habits of the Common House Sparrow (<i>Passer domesticus</i>), 586; Notes on the Acadian Sharp-tailed Sparrow (<i>Passer-herbulus melsoni subvirgatus</i>), 587; Notable Warblers Breeding Near Aiken, S. C., 589; The Yellow-throated Warbler (<i>Dendroica dominica dominica</i>) at Cape May, N. J., 591; The Black-poll Warbler and Bicknell's Thrush at Yarmouth, Nova Scotia, 591; The Summer Resident Warblers (<i>Mniotiltidae</i>) of Northern New Jersey, 592; A Peculiarly Marked Example of <i>Dumetella carolinensis</i>, 593; The Hudsonian Chickadee in New Jersey, 593; The Plain Titmouse, a New Bird for Oregon, 594; The Singing of the Ruby-crowned Kinglet (<i>Regulus c. calendula</i>), 594; Notes from Seal Island, Nova Scotia, 596; Some Summer Residents of Dutchess County, N. Y., 597; Bird Notes from Collins, N. Y., 598; Additions to the 'Birds of Allegany and Garrett Counties, Maryland, 598; Rare and Unusual Birds in the Chicago Area During the Spring of 1920, 600; Items Relative to Some Costa Rican Birds, 601; Observations of a Remarkable Night Migration, 604.</p>	
<p>RECENT LITERATURE.—Townsend's 'Supplement to Birds of Essex County,' 606; Bannerman's 'Birds of the Canary Islands,' 607; Mathews' 'The Birds of Australia,' 609; Leavitt's 'Bird Study in Elementary Schools,' 609; Hudson's 'Recent Bird Books, 610; 'Aves' in the Zoological Record for 1917, 611; Stresemann's 'Avifauna Macedonica,' 611; Wood on the Eyes of the Burrowing Owl, 612; Murphy on the Seacoast and Islands of Peru, 613; Dr. Shufeldt's Bibliography, 613; Birds of the National Parks, 614; Game Laws for 1920, 614; Peters on a New Jay, 615; Chapman on <i>Ostinops decumanus</i>, 615; Lonnberg on 'The Birds of the Juan Fernandez and Easter Island,' 615; Geographical Bibliography of British Ornithology, 616; Spring Migration Notes of the Chicago Area, 616; Nomenclature of the Birds of Bavaria, 617; Van Cleave's 'Acanthocephala of the Canadian Arctic Expedition,' 618; Economic Ornithology in Recent Entomological Publications, 619; The Bird Interest in Iowa Lakes, 620; Bird Liming in Lower Egypt, 621; The Ornithological Journals, 622; Ornithological Articles in Other Journals, 631; Additional Publications Received, 633.</p>	
<p>CORRESPONDENCE.—Popular Bird Names, 634; Baker on the Birds of the Pleistocene, 634.</p>	
<p>NOTES AND NEWS.—Obituary Notices: William Dutcher, 636; Herbert H. Smith, 637; Nicholas Alexievich Sarudny, 638; Frederick W. Headley, 638; Henry K. Oliver, 639; John H. Flanagan, 639; Robert L. Maitland, 640; Note on Biography of Ludwig Kumllein, 640; Government Publications of Birds, 640; Ornithology of the Twentieth Century, 640; Meeting of the Swiss Society for Bird Study, 641; Meeting of the Royal Australasian Ornithologists' Union, 641; Gilbert White bicentenary, 641; Rollo H. Beck, personal mention, 641; The Washington Meeting of the A. O. U., 641.</p>	

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ORNITHOLOGY.

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LIMICOLINE VOICES.

By JOHN TREADWELL NICHOLS.

THE Limicolæ or Shore Birds appeal to the imagination as do few other groups. Their wide migrations, flocking habits, and the uncertainty which attends their movements at all times contribute to the charm of their pursuit. Their calls, usually short, are often ringing and musical, and express well the temper of their haunts, marsh and shore, and so forth. These notes are generally diagnostic and stick well in the memory.

With these few introductory words I will say that the voices of these birds have been studied from several different view-points. The first has been to learn the difference between those of different species, as an aid primarily in identifying the species by ear; entailing a more or less careful study of the range of calls of each kind. The investigation with the greatest philosophic possibilities has perhaps been to determine, so far as possible, the significance of each note of a given species, the circumstances under which used, what it meant to the individual using it, and more especially to other individuals; in short, to get some idea of the "language" of the species. These two lines of study have led imperceptibly to a comparison of the notes of one species with those of another, and speculation on homologies (identification of the note of one species with the note of like derivation in a related species) and

analogies (determining what note of one species has the same *significance* with what note of another which may or may not be its homolog). One of the first things apparent is that the notes of species with similar habits are analogous, those of allied species more or less homologous, but often with very little analogy.

In view of the philosophic interest of the subject it is surprising how few records the literature of ornithology contains of careful observations made to interpret the language of birds and to determine its extent and precision. In Chapman's *Handbook of Birds of Eastern North America* (1912 ed., p. 60, etc.) we find summarized in a few paragraphs the principal facts about this language obvious to the field naturalist. Ordinarily no attempt is made to go beyond these, indeed to do so involves difficulties calling rather for experimentation than for casual observation. Most of the writer's observations on Shore Birds have been made under what are almost experimental conditions. More or less perfectly concealed in a blind, he has observed the birds, many of them in active migration, passing decoys (called "stool" in his locality). There are under such circumstances a limited number of simple acts open for them to perform, each rather easily interpreted, and each repeated over and over in the course of time by birds of the same and related species. It is conclusions from correlation of the birds' cries with their actions under these conditions that he hopes will make a slight step in advance into a difficult subject and be of value to later observers.

The Black-breast, Golden, Kildeer, Ringneck Plover, have each a characteristic diagnostic flight-note, respectively "pe-oo-ee," "que-e-e-a," "ke-he," "tyoo-eep." Though different all these notes have the same rolling character; in fact, are so much alike that they certainly have a common origin, as the birds have,—that is, are homologous. Also, they are used by each in the same way, have the same significance,—that is, are analogous.

Migratory Shore Birds in general have each a diagnostic flight-note analogous with the flight-notes of these Plovers. The flight-note of the Willet ("kiyuk") is sufficiently plover-like to be considered homologous, were the Willet a Plover. I hesitate to use the term "homology" in this case, however, and will therefore call it a note of the same group, and the Plover and Willet notes

flight-notes of group A (rolling notes). The Willet also has a note of less importance homologous with the "whew whew whew" of the Greater Yellow-legs, but lower pitched, which is not its flight-note. The "whew whew whew" of the Greater Yellow-legs is the flight-note of that species, a flight-note of group B (polysyllabic notes). The Greater Yellow-legs also has a more or less plover-like rolling note of group A, "toowhee toowhee toowhee." The commonest flight-note of the Lesser Yellow-legs, though frequently monosyllabic, is clearly homologous with that of the Greater. This intermediate condition in the Lesser Yellow-legs favors consideration of the monosyllabic flight-notes of the Krieker, etc., as group B rather than group A.

The Lesser Yellow-legs, Krieker and Semipalmated Sandpiper have short, snappy, flocking notes which may be considered of group C. There seems to have been an evolutionary tendency for notes of less importance to rise into prominence and replace notes of a preceding group as the diagnostic flight-note of the various species. Before judging of this hypothesis, it will be well to review the calls of the different species studied, which are taken up in the order of the A. O. U. 'Check-List.'

Northern Phalarope (*Lobipes lobatus*). On taking wing, this species utters a chipping note suggesting somewhat that of the Sanderling, either monosyllabic, "tchip" or "tchep," or in two or more syllables.

Woodcock (*Philohela minor*). This solitary, wood inhabiting more or less nocturnal species, is perhaps the most silent. A "twittering" as the bird takes wing is produced by the modified wing feathers. It is almost invariable as the bird takes wing and sometimes heard in full flight, but not as a rule. Species well concealed on the ground which trust to their concealment, and flush only at close range, throwing concealment to the wind as they do so, usually have an analogous striking note at that time, doubtless of value as a signal to others that may be near-by. It corresponds to the whirr of the Ruffed Grouse or the grunting of a startled Bittern, and thus may be mechanical, though usually vocal. Such sounds are very serviceable to the observer as identification marks.

The Woodcock has a well-known crepuscular song, which accompanies the nuptial performance, periodic Night-hawk-like "peents" on the ground, followed by rhythmical wing-twittering as the bird mounts in spirals into the air, followed by series of short, sweet descending whistles as it makes its earthward plunges. The Woodcock and Spotted Sandpiper are the only species that I know as breeders, and although probably most have something analogous with song, I must leave it to other more fortunate observers to describe them.*

Wilson's Snipe (*Gallinago delicata*). The Snipe, like the Woodcock, usually flushes at close range. It calls a harsh "scape," as it goes off, and this note is frequently given or repeated by it when in full flight. Two birds moving east to west over the meadows back of the beach at Mastic, Long Island, on the morning of August 23, 1919, were calling in this manner as they stopped to circle and then went on. As the bird goes out almost from under foot, the "scape" is at times replaced by a series of short hurried notes of similar character. Taken together these two notes are analogous with the wing "twitter" of the Woodcock. They are homologous, on the other hand, with the Woodcock's nasal "peent."

It is interesting to find in the Wilson's Snipe this imperfect differentiation of a note uttered at the moment of taking wing from one uttered when in or approaching full flight,—as it is a condition slightly different from the calls of other more social Shore Birds which trust comparatively little to concealment, take wing while danger is still at a distance with hurried minor notes, so soft as to readily escape notice, and have each a loud diagnostic flight-call of much service in their identification.

The harsh "scape" of the Wilson's Snipe at one end of our series, in keeping with the voices of unrelated marsh birds, frogs, etc., and the discords of close-by marsh sounds continually in its ears contrasts with the peculiarly clear mellow whistle of the Black-breast at the other end, with carrying power over the open distances of that plover's haunts. The connecting series, through

*See numerous references to the songs of northern breeding species in the volumes of 'The Auk.'

reedy calls of marsh loving species and ringing notes of those which spend more time in the open, leaves little doubt that there is some correlation between habitat and quality of voice. We will merely point out that carrying power of voice is an asset to the wide-ranging species of the open, and call the reader's attention to the interesting, if fanciful, remarks of Rhoads on the mimetic character of bird language in 'The American Naturalist' for 1889.

Dowitchers (*Macrorhamphus griseus griseus* and *M. g. scolopaceus*). The flight-note of the Dowitcher resembles that of the Lesser Yellow-legs but is recognizably different,—less loud and more hurried, usually suggesting the bird's name: "dowitch," or "dowitcher," sometimes of a single syllable. This call is subject to considerable variation. When used as a regular flight or recognition note I believe it is most frequently two-syllabled, clear and full. This at least was true of one or more birds observed on the north gulf-coast of Florida, September 6, 1919. One was certainly the Long-billed race, but I detected nothing unfamiliar in its voice and infer that that of the two races is the same. When the call becomes more abrupt and emphatic and the last syllable is multiplied it seems to indicate that the bird is excited rather than to have especial significance, "dowicheche."

A flock manœvered about the stool with single unloud low-pitched "chup"s (Mastic, Long Island, August 25, 1919). A low rattle from this species dropping down to alight (Mastic, May 18), and a startled "chee" from an extra tame Long-billed Dowitcher in Florida flushed by being almost struck with something thrown at it, completed, until recently, the writer's knowledge of the Dowitcher's calls, except that variations of the flight-note have not been fully described.

On September 28, 1919, however, I met with the Long-billed Dowitcher for the first time on Long Island. Two birds of this race stopping on a meadow where there was favorable feeding ground, when coming or going on the wing, when pausing from feeding to call to Yellow-legs which decoyed to them readily, or when standing alert and suspicious of me before flying, kept calling a short sharp "pip!" suggestive of one of the calls of the Solitary Sandpiper, though less loud and metallic. This note was

modified somewhat, perhaps occasionally to "pup" coming in to decoys, or to "peep" at other times. In flushing they sometimes had an unloud chuckling call, short or prolonged.

Except for recent experience with that race in Florida, inclination would be to consider these notes characteristic of the Long-billed Dowitcher, but the chances are there is no significant difference in the calls of the two races. The "pip" note of the Dowitcher corresponds, I take it, to the flocking "kip" note of the Lesser Yellow-legs. When flocks of Lesser Yellow-legs have been present and gone, a few birds still remaining tend to use the flocking note more than their numbers would warrant, for several days. The two Long-billed Dowitchers under consideration had likely been associated with members of their own kind immediately before the migration which brought them to Long Island. Previous unfamiliarity with the flocking note in the eastern bird is accounted for by its small numbers in recent years; we know it to have been highly gregarious when abundant.

Stilt Sandpiper (*Micropalama himantopus*). The common flight-note of the Stilt Sandpiper is very like the single "whew" of the Lesser Yellow-leg, but recognizably lower-pitched and hoarser. An unloud, reedy "sher" has been heard from a pair of birds when flushing (Long Island, July 26, 1919).

The resemblance of flight-notes of Dowitcher and Stilt Sandpiper to notes of the Lesser Yellow-legs is too striking to be passed without comment. They are species whose habits of flight differ least from it, and which are most generally associated with it in the same flocks, though their feeding habits are different. The resemblance of notes may be explained in several ways. One explanation would be of racial homology, that these are specialized descendants of the Lesser Yellow-legs not related to *Gallinago* which they resemble in form and near which they are conventionally placed. It is more reasonable to suppose the notes have been to some extent borrowed back and forth between the three. We are dealing here with *flight notes*, which in the two Yellow-legs certainly have shown a tendency to deviate rather than to come together, but then the flight-habits of those two are more contrasted. As the matter stands, the notes of the three (Dowitcher,

Stilt Sandpiper, Lesser Yellow-legs) are sufficiently different for identification and perhaps the very lack of close relationship in the birds has facilitated convergence of their calls.

The findings of W. E. D. Scott relative to acquisition by imitation versus inheritance of passerine bird notes has no real bearing on the subject matter of the present paper save possibly at this point. They make it not unreasonable to suppose an influence of the calls of customarily associated species upon one another.

Knot or Robin Snipe (*Tringa canutus*). The flight-note of the Robin Snipe is a low-pitched whistle, frequently in two parts, with a peculiar lisp or buzz in it: "tlu tlu."

Krieker or Pectoral Sandpiper (*Pisobia maculata*). The habits of the Krieker are, in a sense, intermediate between those of the Wilson's Snipe and of other species to which it is more closely allied and resembles more nearly in habits. On the wing, it associates in flocks which migrate by day, often mixed with other species. On the ground it frequently scatters singly among the grass, and, trusting to concealment, does not take wing till approached very closely. Its notes are neither as hoarse and heron-like as the Snipe nor as clear and ringing as those of most other species, having a reedy character.

The flight or identification note analogous with the three ringing "whew"s of the Big Yellow-legs analogous and probably also homologous with the "cherk" of the Semipalmated Sandpiper, is a loud reedy "kerr," resembling the latter more than any other Shore Bird call.

In being flushed, the Krieker often has hoarse hurried cheeping notes, analogous with similar harsher notes of the Snipe.

Rarely in flight the "kerr" is varied into or replaced by a diagnostic near-whistled "krru."

A chorus of short snappy "tchep"s or "chip"s has been heard from a flock of birds, alert and on the move. This call is probably analogous with the short flocking notes of the Lesser Yellow-legs. To my ear the Krieker's flushing note is more or less a combination of its flight-note and flocking note, and it is likely a combined expression of the mental states most commonly associated with these two. The flocking note communicates alertness to near-by

members of a flock, the flight-note is used most emphatically by singles that have become separated from their companions or are in active flight and disposed for companionship. On being flushed, the bird is signalling to possible companions, but as it has been feeding singly, concealed from such others as there may be, by the grass, their distance is uncertain.

White-rumped Sandpiper (*Pisobia fuscicollis*). The flight-note is a squeaky mouse-like "jeet," quite unlike any other Shore Bird note. This seems to be its only call in southward migration.

Least Sandpiper (*Pisobia minutilla*). The identification flight-note of this species is a loud diagnostic "kreep." It is occasionally varied to resemble somewhat the "weet" of the Spotted Sandpiper, or the flight-note of the Ring-neck, though it is neither whistled nor melodious. It is seldom used on the ground, but on August 9, 1919, at Mastic, I made an observation on its use by an alighted bird to call in another individual from the air. About four Kriekers, a couple of Solitary Sandpipers, and about five Least Sandpipers were alighted on a bit of dead meadow. One of the latter called repeatedly, a very fine high clear "kreep," apparently corresponding with a faint husky "kreep" from another somewhere in the distance, presumably a bird which presently appeared hovering and dropping down to alight with the others.

In flushing, a Least Sandpiper sometimes utters a string of short unloud notes with or without the ee sound, "quee-quee-quee-que," or "queque," to be followed almost immediately by a variation of the flight call, as it gets more fully underway.

The flight-note varies down to "che" and "cher," not readily, if at all, distinguishable from similar calls of the Semipalmated Sandpiper.

When a flock are up and wheeling about a feeding spot to alight there again almost at once, they have sometimes a confiding little note "chu chu chu chu," etc., with variations, which has also been heard from the first bird of a flock to alight, when already on the ground. This is suggestive of the "yu yu" note of the Lesser Yellow-legs, analogous with notes No. (6) or (7) of that species.

The Least Sandpiper has a whinny, a little less clearly enunciated than that of the Semipalmated, but almost identical with the same.

American Dunlin or Red-backed Sandpiper (*Pelidna alpina sakhalina*). The flight-note is an emphatic near-whistled "chu!" or "chru!" resembling some of the calls of Krieker and Semipalmated Sandpiper. The species very likely has other calls with which I am not familiar, as I have had little field experience with it.

Flushing note, of a single, a fine "chit-l-it" (Florida, 1919).

Semipalmated Sandpiper (*Ereunetes pusillus*). The Semipalmated and Least Sandpipers, our smallest species, are very generally found associated and some of their varied lesser calls are almost identical, the more definite ones, however, are absolutely distinct. It is noteworthy that the calls of the Least Sandpiper are less similar to the Krieker's than are those of the Semipalmated. Such dissimilarity between flight-notes of closely allied species seems to be the rule rather than the exception. We may note the difference between the calls of the two Yellow-legs, and that the note of the White-rumped Sandpiper is entirely different from that of allied Krieker and Least Sandpiper.

The flight-note of the Semipalmated Sandpiper is a rather loud "cherk," softer and less reedy than the analogous Krieker "kerr." It is commonly modified to a softer "cher" or "che," which, with much variation, becomes the conversational twittering of members of a feeding flock.

Soft, short, snappy "chip's" are characteristic of flocks manoeuvring about decoys, and less frequently heard from singles or two or three birds together,—analogous and homologous with the short flock note of the Krieker.

Hurried cheeping notes ("ki-i-ip") on being flushed, are suggestive of the same note of the Krieker. This seems to be a variation of the short, flocking note; at other times the Semipalmated Sandpiper flushes with what appears a variation of the flight-note, as "serup cherp cherp," (Mastic, August 23, 1919). I have heard the former from a bird on a meadow, loosely associated with Kriekers. This suggests the probability that borrowing of notes

between species which associate has had some part in the evolution of their calls, or that there is a tendency for certain analogous notes of such species to approach one another. That the analogous loud flight or identification note of each is so distinct indicates that the opposite tendency is at work, which in turn, supports the hypothesis that such calls have identification value for the birds themselves, as they will soon come to have for any field student who takes up the group. It seems scarcely probable that the short flocking note of Krieker and Semipalmated Sandpiper have any true homology with the analogous note of un-allied Lesser Yellow-legs, but from seeing Lesser Yellow-legs and Kriekers flocking together on meadows, equally favorable feeding grounds for each, I suspect some such borrowing may have taken place between these two.

A clear ringing whinny, from a bird in a flock or otherwise, on the ground or in the air, usually heard in the spring, is probably in some manner associated with the breeding season.

Western Sandpiper (*Ereunetes mauri*). Though some of its calls seem indistinguishable, in general the notes of this species (as studied on the north Gulf Coast of Florida, September 1919) are unlike those of *pusillus*. Its most common loud call is variable and may be written "cheé-rp, cheep!" or "chir-eep." This note has the "ee" sound found in the "kleep" of the Least Sandpiper, but has a plaintive quality suggestive of the note of the Sanderling, and it also suggests the squawk of a young Robin. Its closest resemblance to that of other small species is to the unloud "serup" heard from *pusillus* when flushing, and which varies into the regular flight "cherk" of that bird. It seems to be the corresponding flight-note of the Western Sandpiper, and is also used by a bird on the ground calling to others in air which alight with it, just as the flight "whew" of the Lesser Yellow-legs is so used.

Birds in flushing had a second dissimilar note "sirp" or at another time, "chir-ir-ip," which heard also in a medley of variations from a flock already on the wing, may be more or less analogous with the short flocking note of the Semipalmated Sandpiper, and suggested the notes of the Horned Lark.

Surf Snipe or Sanderling (*Calidris leucophaea*). The note of the Surf Snipe is a soft "ket, ket, ket," uttered singly or in series. I have heard it from birds taking wing but am not sure just how generally it is used or what its analogies are. This species is rather silent at all times.

The notes of the Shore Birds allied to the Tattlers have no apparent homology with those of the species so far treated. The Greater and Lesser Yellow-legs are the Tattlers whose voices have been most closely studied. A rather careful compilation has been made of the notes of these birds as heard in 1918, the same compared with earlier data, and conclusions checked up by observation the present year (1919).

Greater Yellowlegs (*Totanus melanoleucus*). The varied notes of the Yellow-legs are perhaps the most familiar of any, and frequent reference is made to them in discussion of other species. For convenience they are numbered serially.

(1) The yodle (a rolling "tóowhee tóowhee" etc.) is commonest in a flock, from birds remaining in one locality, not travelling. I think I have heard it from a single bird in the fog. It is characteristically given in the air, generally with set wings, by birds which seem to contemplate alighting. It advertises birds tarrying in one general locality, and has probably the function of *location* notice. It is doubtless homologous with the gather call of the Spotted Sandpiper with which it has little analogy.

(2) Loud ringing 3, "wheu wheu wheu." The characteristic cry of the species, spring and fall. It is commonly given by passing or leaving birds. It advertises the species,—and a change of policy in the individual according to its loudness. Analogous with notes of other species spoken of as *flight-notes* or identification notes; occasionally heard from an alighted bird. This call is subject to considerable variation, when heard from a bird about to drop down and join others feeding it is comparatively low-pitched and even, leaving or about to leave a feeding ground, highly modulated.

(3) Four "wheu"'s, heard as follows, seem to have a rather definite significance: Low hurried descending, heard from a bird leaving companion. Short clear four, by a following bird. Loud

four, bird without intention of alighting, trying to flush decoys. This may be called a *recruiting* call.

(4) Twos, ("whew whew") seem to be characteristic of a *recruit*. A "gentle" bird which comes nicely to decoys is apt to call in twos when approaching and coming in.

(5) Rarely, in taking wing in the presence of an intruder, a single bird utters a string of unmodulated "whew"'s which breaks up into threes or fours as it goes off. This is likely a note of *protest*, which would be more common in the breeding season.

(6) Conversational murmuring, from a flock dropping in, expresses *companionship* and confidence.

(7) Conversational "chup" notes from birds about to alight, also heard from birds alighted, moving about at ease. The *alighting* note.

(8) Unloud "chup's" identical with the preceding but more hurried, given by a small flock of birds as they take wing. The *flushing* note.

(9) "Kyow,"—common in spring, only rarely heard in southward migration; probably associated with the breeding season; seems to express *suspicion*.

Lesser Yellow-legs (*Totanus flavipes*). When on the ground in flocks, the Lesser Yellow-legs is usually silent. The same is true frequently of single birds coming in. In the air it is more or less noisy and has two common distinct notes:—"whew" and "kip" or "keup," which seem to be used rather indiscriminately on various occasions and which vary into one another. Wandering singles and small companies seem to use the "whew" more, often double. The combination "whew hip" is frequent. From large companies, especially in uncertainty, one may hear a chorus of "kip's."

(1) The yodle probably corresponds in significance with that of the Greater Yellow-legs—*location*. It is certainly its homolog and scarcely, if at all, distinguishable from it.

(2) The "whew" is a regular *flight-note*, likely advertisement. Generally silent birds alighted, sometimes call an occasional single "whew" (at such times particularly soft and mellow) before others drop in to join them, as if in *welcome*.

When double, this note of the lesser Yellow-leg is at times clear and full, difficult to differentiate from that of the larger species, and apparently likewise characteristic of a "gentle" bird, which will join decoys, or others alighted.

(5) Whereas the "whew" note of the Lesser Yellow-leg is most frequently single and very seldom more than double, I have heard a variation of it in series from one of an alighted flock (Mastic, July 13, 1919) "hyu-hyu-hyu-hyu-hyu" etc. Presumably this was in protest at my presence, corresponding to the similar note of the larger species.

(6) Soft, unloud murmuring of a flock in chorus, "yu yu yu" etc., characteristically heard, as on August 10, 1919, from a flock moving leisurely over the meadows, after having been flushed, to shortly alight again, expressive of *companionship* and confidence.

(7) When dropping down to alight, often hovering over decoys, a flock of Lesser Yellow-legs has soft short "cup, cup, cup," etc. notes.

(8) At the instant of flushing almost the identical notes as above given hurriedly with more emphasis. This for the Lesser Yellow-legs is a rough analog of the cheeping note of the Krieker, but in view of the different habits of the two species, can not be said to be strictly analogous with same.

(10) An unloud chuckle or series of short notes suggesting a very distant Jack Curlew, heard sometimes, not very frequently, when one or more birds take wing. Should probably be considered a flushing note or signal to take wing. Seems like the attempt of one individual to reproduce the preceding, which is often from several birds of a flock.

(11) The "kip" is likely one bird calling to another close-by. It is typically a *flocking* note, otherwise used almost exactly as is note No. (2). A variation,—"keup," with broader sound, approaching the "whew," expressing *attention*, is frequent. It has been heard from a flock of birds which had been resting and bathing, just before taking wing (Mastic, September 15, 1918).

(12) An infrequent note of quite different character from the Lesser Yellow-legs' ordinary calls is very high and clear, "queep." It is subject to much variation, as "peép-quip," "eep!" but is characterized by the high "ee" sound. It has been heard from

birds alighted, more particularly when their companions, alarmed or for some other reason, move on, and is thought of as the *tarrying individual's* note. On August 17, 1919, I had picked up decoys preparatory to leaving a pool in the meadows when a single Lesser Yellow-legs came down to the pool calling a similar "kee-a" on the wing, though I was in full view. It went on without alighting with "whew" notes characteristic of the species. Probably this was an individual which wanted to stay, from a small company which had left the meadow.

(13) Wounded birds, on being pursued and captured, have a harsh scream of fear, "cheerp." I have noticed this from birds of the year in southward migration only, not from adults under the same circumstances.

Thus six of the ten notes assigned to the Lesser Yellow-leg are interpreted as analogous with six of the nine of the Greater, namely, *location*, *flight*, *protest*, *companionship*, *alighting* and *flushing* notes. With the exception of the flight-note these seem also strictly homologous, and little differentiated intraspecifically. The flight or identification note if homologous is divergent, as utility requires that it should be. It is homologous with the Greater's flight-note series—Nos. (2), (3), (4), and (5). Setting aside note No (9) of the Greater, likely associated with the breeding season, the two for which nothing to correspond has been found in the Lesser are *recruiting* and *recruit* calls, Nos. (3) and (4), differentiations of the flight-note. As a matter of fact a variation of the Lesser's flight-note is very close to the recruit note, and the condition may be summed up by saying that the flight-note of the Greater has to a greater extent than that of the Lesser been broken up into different notes of specialized application.

Setting aside No. (13), which the Greater probably also possesses, though I have not heard it, there are three notes of the Lesser for which nothing to correspond has been found in the Greater. Of these the flocking note, No. (11), correlates with its more gregarious habits. From knowledge of the voices of the two to date it seems that the more individualistic, intelligent and wary Greater has calls with more precise significance than the more social Lesser, something more closely approaching a true language, whereas the voice of the Lesser has undergone a longer evolution,

and it has acquired greater dissimilarity of calls. The specialized notes of the Greater are largely variations of the flight-note stem, which occurs in its simplest form in the Lesser, not its primitive form, however, if such is as we suppose, polysyllabic. The habits of the Lesser are less adaptively specialized in detail than those of the Greater, yet more specialized taken as a whole, a condition paralleled by the respective notes of the two.

In the majority of cases there is no difficulty in identifying either Yellow-legs with certainty from its ordinary louder notes; except that the analogous as well as homologous "whew whew" common with both and the rare occasions when the Greater uses a single "whew," require a keen ear to detect the difference in quality of voice. Nevertheless, just this last year (1919) there have been two instances in the field on Long Island, where with a little less training my ear would have assigned Lesser Yellow-legs calls to the other species. In both instances, the first in May, the second in late September, a small number of the Lesser Yellow-legs were associated with a larger number of the Greater, reversing the ordinary condition. My suspicions that in default of its own kind the Lesser was endeavoring to copy the calls of the other with which it was associated, aroused by the first observation, which was unsatisfactory, were confirmed by the second, a thoroughly satisfactory one. A flock of birds containing a couple of Lesser and perhaps five Greater Yellow-legs was flushed by a Marsh Hawk from a pool where my decoys were also placed. All went off to the north with the exception of one Lesser which promptly returned and alighted with the decoys. It called "whew" and "eep!" repeatedly, and flushed again with an unloud Jack Curlew-like series, all notes characteristic of the Lesser, and highly appropriate to the circumstances, then followed the direction the other birds had taken. Its notes now should have been a somewhat more abrupt "whew" or "whew-hip," or short "kip"s, had it been recently associating in flocks of its own kind, but to my astonishment they were "whew-whew" and "whew-whew-whew," trisyllabic! not at all abrupt and unusually loud for the Lesser; I think it was not my imagination which made them sound strained. The situation was not without its humorous side as a Greater Yellow-legs under similar circumstances would have been

apt to use four syllables, and if three, these highly modulated and ringing, the Lesser's three approaching most nearly that of a Greater about to alight.

I think I am correct in homologizing the ringing whistled voices of the Yellow-legs with comparatively sharp piping voices of Solitary and Spotted Sandpipers. The difference is related to the more wide-ranging and flocking habits of the former.

Solitary Sandpiper (*Helodromas solitarius solitarius*). The flight-note of the Solitary, "peep weep weep," is often difficult to differentiate from notes of the Spotted Sandpiper, but probably always differentiable. It is a cleaner-cut sound, less variable, more suggestive in accent than are those of the Spotted Sandpiper or the whistle of the Greater Yellow-legs. In August, 1919, several Solitaries were living on the meadows at Mastic, Long Island. They were frequently found feeding, flushed or observed making longer or shorter flights at no great heights. In these cases the note was double "peep weep," rarely single. When a bird is changing its grounds the same note is more often three, sometimes two-syllabled, and so given when definitely leaving a locality or by wandering birds which ordinarily fly high.

A quite dissimilar call, less frequently heard, is a fine "pit," "pit pit," or "chi-tit." This may have no significance other than being a reduction of the preceding, when the bird is less definitely on the wing, but seems to depend on there being another individual fairly close by. There is likely homology between it and the short flocking call of the Lesser Yellow-leg, and if correctly determined, a certain analogy thereto is also established, perhaps as much as possible with this non-social species. Of similar quality was a peculiar "kikikiki" from one of two birds in company which came to decoys nicely (Mastic, August 10, 1919), as they went out past me without alighting.

A third note, isolated "pip"s, suggesting the call of the Waterthrush, is expressive of excitement when a bird is on the ground, as when just alighted.

Willet (*Catoptrophorus semipalmatus* races). The identification flight-note of the migratory Willet is a far-reaching, gull-like "kiyuk," repeated at intervals. On the breeding grounds in

spring there are several variations of this note, one "ki-yi-yuk," much like the loudest, most ringing call of the Greater Yellow-legs.

A less frequent note resembles the "whew whew whew" of the Greater Yellow-legs but is much lower pitched, not loud. It is homologous but not analogous with this Yellow-legs note. It has been heard from a bird hanging about a pool in the meadows.

"Ply-wly-wip, ply-wly-wip," corresponds to song; it is the common loud note on the southern breeding grounds in spring; its author most frequently poised on quivering wings above the meadow.

"Kuk-kuk-kuk-kuk-kuk" etc., in tern-like series from two mating birds is probably homologous with the *alighting* and *flushing* notes of the Yellow-legs, Nos. (7) and (8).

Loud high "kree-uk" infrequent in spring on the breeding grounds, suggests No. (12) of the Lesser Yellow-legs with which it may be homologous.

Spotted Sandpiper (*Actitis macularia*). The Spotted Sandpiper is the only species of which the calls, while nesting, are thoroughly familiar to the writer, and it should be borne in mind in comparing them with those of the others treated that the comparison is not a fair one; these others doubtless have breeding calls with which he is unfamiliar.

"Hoy, hoy, weet, weet, weet, weet weet weet weet" is a prolonged call frequently heard in the early part of the nesting season, in toto or in part, suggesting in that respect the songs of the cuckoos. It doubtless has value as *advertisement* or *location* notice and something the significance of a very generalized song. A series of loud "weet"s, heard also at other times of year, the most far-reaching call of the species, doubtless serves as location notice. Towards sunset on July 16, 1919, Oyster Bay, N. Y., the weather still and foggy, one at the shore was so calling repeatedly, I felt sure in an effort to locate another of its kind.

"Pip! pip! pip!" is a note heard between adult birds in the breeding season which seems to be of polite address, or possibly impolite, as it is almost identical in form with a note of protest by old birds when nest or young are threatened. This last is perhaps shorter and dryer. Something very like the former has been heard from an old bird when with her young.

A rolling note, "kerrwee, kerrwee, kerrwee," now loud, now very low and distant, has been heard from an adult with the evident purpose of assembling her young. Though with different, specialized application, it is pretty surely homologous with the location notice, No. (1) of the Yellow-legs.

Young birds that have taken refuge in the grass, presently if danger seems passed, begin to call "pip wip," perhaps the note most like that of the Solitary Sandpiper, to advertise to one another and their parents what and where they are. The "pit-wit-wit" frequently heard from adults as a note of departure may best be considered a variation of this one as also the "peet weet weet" or "weet weet" most frequent a little later in the season as little companies of birds start out over the water for longer or shorter distances. The third variation is the most characteristic note of the species, frequently heard from passing birds, and a very good analog of the flight-identification notes referred to under the transient species. From it is constructed the latter part of the song. The initial notes of same likely have some homology with the rolling note compared to No. (1) of the Yellow-legs.

An old bird, surprised near her brood and fluttering off playing wounded called "cheerp cheerp," a sort of scream as of pain and fear, doubtless the impression it was intended to convey, and a young bird, captured, cried "seep," indicative of its dire extremity.

Hudsonian or Jack Curlew (*Numenius hudsonicus*). The flight-note of the Jack Curlew resembles that of the Greater Yellow-legs from which it is rather easily distinguished, being less modulated and usually lower pitched. It commonly consists of four short whistles, but is frequently prolonged even into a trill. The more prolonged calls are usually the dryer, and seem characteristic of the noisiest birds, flying highest or with most uncertainty.

Black-bellied or Black-breast Plover (*Squatarola squatarola*). The flight-note of the Black-breast is a clear ringing "pe-oo-ee" although shortened and otherwise varied at different times, this note is the only one ordinarily heard from single individuals or small flocks of this species. In general it may be said that the

diagnostic flight or identification note of Plovers is used more generally than in Yellow-legs and other species, for instance, and that they seem to have less variety of calls.

A second, flocking note, is a soft mellow "quu-hu" (from about 15 birds together, Florida, September 6, 1919) heard both in air and on the ground, and in chorus when a flock was flushed, circling and hovering in uncertain manner.

A dissimilar untold "cuk cuk cuk, cuk, cuk, cuk cuk cuk cuk" heard from a single bird alighted with decoys and running about (also Florida, September).

Golden Plover (*Charadrius dominicus dominicus*). The flight-note of the Golden Plover is a ringing "que-e-e-a" less clear and whistled than that of the Black-breast, with a suggestion of the Kildeer in it.

Kildeer Plover (*Oxyechus vociferus vociferus*). The common note of the Kildeer used in flight and at other times is a sharp "ke-he!" When the bird is flushed it is characteristically varied to "ki-i-he." About its breeding grounds, where it is very noisy, the note is commonly "ke!" or "kehe!"

Semipalmated or Ring-necked Plover (*Aegialitis semipalmata*). The flight-note of the Ring-neck is a short, whistled "tyoo-eep." The birds have a variety of lesser notes which are not so often heard, and most frequently in the spring. A little company of probably wintering birds (Florida, late March) called "kup, kup," as they were flushed and flew a few yards to alight again. The flight-note is sometimes replaced by rougher cacking notes in small flocks on the wing.

Piping Plover (*Aegialitis meloda*). The plaintive piping notes of this species are so characteristic of its breeding grounds, they are evidently associated with the nesting season, and perhaps correspond to song. At other times the birds are rather silent.

Wilson's Plover (*Ochthodromus wilsonius wilsonius*). The commonest note on the ground and on the wing (Florida, late March, apparently on breeding grounds) is a tern-like "quip," sometimes double "qui-pip." Less frequently, on the ground, a surprisingly human whistled "whip."

Ruddy Turnstone (*Arenaria interpres morinella*). The common flight-note of the Turnstone is a low cackle. This note is not very broadly used as flight-notes go, being most common from birds that are leaving the vicinity. A much rarer loud plover-like "kik-kyu" I have heard from a bird when coming to decoys or flying along the edge of favorable meadows.

The above is a pretty comprehensive resumé of the calls of the different species as definitely noted to date. Attempts to render each call by letters are at best unsatisfactory and probably no two people would do so in a like manner, but a field student of the birds will in most cases have no difficulty in following this classification of notes, and it is my only way to give any idea of their variety and character. It should be understood that it is only in the majority of cases that the calls correspond to circumstances to which they are assigned. No more could be expected in view of the doubtless rapidly changing psychic processes of the birds, of which we know nothing. The amount to which each note varies, and they vary into one another, should not be lost sight of. In the writer's opinion comparatively little of the birds' "vocabulary" is lost, however, by incomplete knowledge of these variations, whereas a great deal is lost by imperfect differentiation of inflection and tone. His hypothesis is that the form of the call, limited by the species to which the bird belongs, is correlated with numbers, environment and behaviour, especially present but also past or future; that its quality depends largely on emotion or state of mind, as alarm or confidence, restlessness, sociability, etc., etc. Less indication than presupposed, has been found of distinct and dissimilar calls corresponding to emotional states. A "note of alarm" has proved particularly elusive. Alarm, easily introduced experimentally, shows as determinant of the bird's actions, but the accompanying notes (if any) are such as accompany similar actions when it is obviously not alarmed.

One other thing is very striking; birds in the air are extremely sensitive to the calls of others on the ground, and only in a less degree to imitations of them. Birds on the ground are equally sensitive to the calls of others in the air, but pay astonishingly little attention to any imitated notes.

Whether one calls them language or not, the calls of other individuals of each kind of Shore Bird and associated kinds, are unquestionably an important part of the life of every member of the more social species, and one of the chief factors which direct its behaviour.

In the consideration of obscure details there is danger of omitting the obvious thing which would be of most interest to some readers. It is certain that an individual recognizes the flight-note of its own kind as such, as who can doubt who has had a Black-bellied Plover, too wary to come to decoys, yet circling round and round answering each imitation of its cry? As certainly in some cases birds recognize the flight-notes of other species for what they are, the Turnstone will decoy particularly well to the whistle of the Black-breast, a species of similar habits to its own, with which it likes to associate.

From the point of view of general contour and of habits (and taking the characters which separate the Limicolæ from other groups as criteria) the Plovers are our most generalized end, and that of *Gallinago* the most specialized end of the series here considered. Without assuming that this superficial viewpoint corresponds with the true philogeny of these birds in any way, it is to be expected that the notes, which are intimately related to habit, will be most readily classified in a parallel manner. The analogies between dissimilar notes and lack of analogy between certain evidently homologous notes of related species, implies that these calls are not stereotyped for each, but in process of change in a manner allied to that of human language. Studied mostly in migration, all species seem to have primarily a flight, identification or advertisement note, calls less loud and striking, and sometimes still louder and more ringing notes, allied to, but with less definite application than the identification note. It is my hypothesis that there is a more or less definite evolutionary tendency for lesser calls to replace the flight-note, which becomes still louder and far-reaching as it loses particular value and becomes less frequent.

By this hypothesis, the differing but evidently homologous flight-notes of the Plovers (Black-bellied, Ring-necked, Kildeer, Golden) correspond to the "kik-kyu" of the Turnstone, which

they resemble, and which is being replaced in the Turnstone as a flight-note by the characteristic rattle of that species. Similarly the Yellow-legs' yodle has been derived from a plover-like flight-note, and the Greater Yellow-legs and Jack Curlew flight-notes correspond to the Turnstone rattle.

The flight-note of the Willet seems to correspond rather to those of the Plovers than to those of the Yellow-legs. On the other hand the single "whew" of the Lesser Yellow-legs is evidently homologous with the "whew whew whew" of the Greater, and the flight-notes of the Krieker, etc., may as well correspond to it, or to that of Willet and Plovers.

ADDITIONAL DATA 1920

The notes of two Oyster-catchers (*Haematopus palliatus*), forced to take wing: "crik, crik, crik," etc., once a longer "cle-ar" interpolated, which suggested flight-calls of Willet and Black-breast Plover (North Carolina, April).

A Marbled Godwit (*Limosa fedoa*), flying towards decoys, gave a single unwhistled note, "hank," likely the flight-note of the species in migration. Alighted, it had a short unloud note, a goose-like "honk," especially when other Shore Birds swung by it (Long Island, August).

A single Dowitcher on the ground, when a flock of Lesser Yellowlegs were flushed a little way off, called a mellow plover-like "cluee?," and when these departed took wing with more ordinary Dowitcher calls and followed after. The peculiar cry suggested the *tarrying individual's* note of the Lesser Yellowlegs, with which it is likely analogous (Long Island, July).

When a flock of a half dozen Lesser Yellowlegs came to decoys, one bird alighted first, had a low-pitched unfamiliar "too-dle-hoo-hoo, too-dle-hoo-hoo, too-dle-hoo-hoo," before the others, still on the wing, came back and alighted with it. Though probably of similar derivation, this note was quite different from the yodle of the species, and is probably more of a gather call (Long Island, August).

American Museum of Natural History, New York City.

SUMMER BIRD RECORDS FROM LAKE COUNTY, MINNESOTA.

BY CHARLES EUGENE JOHNSON.

THE records here presented were obtained chiefly during the summers of 1912, 1914 and 1915, while conducting expeditions sent out by Mr. James Ford Bell of Minneapolis, for the purpose of collecting specimens and obtaining photographic records of big game and other mammals in the northeastern wilds of Minnesota.

In order to accomplish the main objects of the expeditions only a small part of the time could be devoted to the bird life of the territory visited and therefore the records listed, far from complete, are such as were made as opportunity offered in the course of other work.

It had been my intention at another time to make a more thorough study of the birds of Lake County before submitting my list for publication. Because of a number of unforeseen developments, however, this plan had to be abandoned and since leaving the University of Minnesota I have thought it advisable to submit the list in its present form in the hope that it may perhaps serve as a basis for further work by others who may find opportunity to add to it and carry it nearer to completion.

So far as I am aware no list of birds from the region covered by these notes has before been published.

The territory concerned may be roughly defined as lying between White Iron Lake on the west and Perent Lake on the east; the Kawishiwi river and its northern fork or North Kawishiwi forming the northern and the Isabelle and Island rivers forming the southern boundary. The names of lakes, rivers, portages and other features are those given on the maps of the Federal and the State Forest Service. The Clear Lake mentioned is the one found in Township 63 N., and Range 10 W., and not the lake of the same name in Township 62 N., and Range 9 W.

Effort has been made to designate all localities where records were made with as much accuracy as brevity of description permits.

Podilymbus podiceps (Linn.). **PIED-BILLED GREBE.** The only record I have for this species is one for August 18, 1914, when a single individual was seen in the Isabelle River about a mile below Rice Lake.

Gavia immer (Brunn.) **LOON.** During the month of July Loons were occasionally seen or heard in Farm Lake and in Gabro and Bald Eagle lakes. During August and early September they were plentiful in the Isabelle Lake region, where we were encamped at that season.

Larus argentatus Pont. **HERRING GULL.** 1912: August 5, a Herring Gull was seen at Lake Bald Eagle. 1914: During the first week of July a pair of Herring Gulls was daily seen on a flat rock near the south shore of Clear Lake. By the time we had made our portage into this lake these birds had apparently left the locality, but on the rock was found a large nest of mosses, grasses and small twigs, which had the appearance of having been recently abandoned. In the month of August several Herring Gulls were seen on one occasion on a small rocky island in Lake Isabelle.

Mergus americanus (Cass.). **AMERICAN MERGANSER.** 1912: June 27, two newly hatched ducklings were taken from among a brood of eight or ten, on the North Kawishiwi River at the lower end of the long rapids below the fork. July 1, a brood, with the female, was observed near the North Kawishiwi-Clear Lake portage; August 29, an adult male and two females were shot on the Isabelle river a short distance below Isabelle Lake. 1914: One brood of young and several adult birds were seen during the first week of July, near "Dead Man's Rapids" on the North Kawishiwi; July 28, a female with a large brood of young somewhat more than half-grown was observed at the rapids at the upper end of Lake Gabro. 1915: Two broods of young were seen July 8, on the South Kawishiwi opposite Clear Lake. August 30, several small flocks, evidently separate broods, were observed on Lake Isabelle.

Lophodytes cucullatus (Linn.). **HOODED MERGANSER.** 1912: June 27, two adult females were shot on the North Kawishiwi near the Clear Lake portage trail; August 29, a male and female were shot on the Isabelle river midway to Lake Bald Eagle. 1915: August 7, a female with a brood of half-grown young was seen on the upper Perent river; August 30, a number of flocks of Hooded Mergansers, one of which contained 25 to 30 birds, were seen on the Isabelle river a short distance below Isabelle Lake.

Clangula clangula americana Bonap. **GOLDEN-EYE.** 1912: July 1, an adult female was shot on the North Kawishiwi river about three miles west of the Clear Lake portage; July 17, two females with broods were seen at the rapids of the Gabro Lake outlet; July 23, a female with a brood of nine young was seen on the South Kawishiwi opposite Clear Lake; August 20, an adult male was shot on the Isabelle river near Rice Lake, and another near Lake Isabelle. 1914: July 11, an adult female was seen at the Gabro Lake outlet; July 20, a young female was shot from among a brood of three accompanied by the female, near the long rapids of the North Kawishiwi river. 1915: July 9, a female with a small brood

was seen on the South Kawishiwi river opposite Clear Lake; July 16, a female with her brood was seen at the west shore of Lake Bald Eagle.

Anas platyrhynchos Linn. MALLARD. This species occurred in small numbers in all parts of the region visited. Females with broods were seen in July, 1914, along the southwest shore of Lake Bald Eagle, on a small stream entering this lake from the west, and on the South Kawishiwi river near the Clear Lake portage. 1915: July 25, a female with five young was seen at the Rice Lake outlet.

Anas rubripes tristis Brewst. BLACK DUCK. 1912: August 28, a flock of 13 Black Ducks was observed along the east shore of Lake Isabelle. August 7, 1915, a single specimen was seen on the upper sources of the Perent river.

Aix sponsa (Linn.). WOOD DUCK. A single specimen of this species was seen in July, 1915, along the Isabelle river about midway between Rice Lake and Lake Bald Eagle.

Botaurus lentiginosus (Montag.). BITTERN. The only Bitterns seen at any time were observed at the mouth of the Isabelle river. One was seen in that locality during the first week of August, 1913, another was seen July 31, 1914, and two days later, August 2, two Bitterns were seen at the same place.

Ardea herodias herodias Linn. GREAT BLUE HERON. This heron was common along the watercourses in all parts of the region visited. In 1912, a heronry of about a dozen nests was found on July 5, about three hundred yards south of the North Kawishiwi at the upper end of the large lake-like expansion occurring some distance above Farm Lake. This heronry was visited again, early in July, in 1914 and in 1915. My notes under date of July 22, 1914, state that "there is quite certainly another heronry located some distance north of the Kawishiwi at a point about a mile east of the long rapids; heard squawking and croaking in this direction, July 30."

Porzana carolina (Linn.). SORA. My only records for the Sora are for August 16, 1914, when one was seen along the Isabelle river just below Rice Lake, and another at a beaver dam on a small stream entering the Isabelle about a mile and a half below the lake mentioned.

Gallinago delicata (Ord.). WILSON'S SNIFE. August 12, 1912, a single individual of this species was seen along the Isabelle river at the second portage above Lake Bald Eagle.

Pisobia minutilla (Vieill.). LEAST SANDPIPER. August 11, 1914, two of this species were shot from among a flock of six on a mud-flat along the Isabelle about a mile below Rice Lake.

Totanus melanoleucus (Gmel.). GREATER YELLOW-LEGS. A single individual was seen September 2, 1914, on a small island at the east end of Lake Isabelle.

Totanus flavipes (Gmel.). YELLOW-LEGS. One was shot August 8, 1914, on the northeast shore of Lake Isabelle; another was seen in this locality August 8, 1915.

Helodromus solitarius solitarius (Wils.). SOLITARY SANDPIPER. During the month of August, 1914, this sandpiper was seen rather frequently in the region of Rice Lake and Lake Isabelle. August 9, 1915, one was seen on the northeast shore of Lake Isabelle and one along the lower Perent river.

Actitis macularia (Linn.). SPOTTED SANDPIPER. August 20, 1912, three specimens were shot along the Isabelle river just above the first rapids.

Canochites canadensis canace (Linn.). CANADA SPRUCE PARTRIDGE. 1912: August 5, several were seen on the Bald Eagle and Gull Lake Trail. 1913: In August two young specimens were shot on the trail mentioned; they were among a brood of several accompanied by the female. 1914: July 14, a female and eight young were seen in a sphagnum bog near the South Kawishiwi river just north of the Gabro Lake outlet.

Bonasa umbellus umbellus (Linn.). RUFFED GROUSE. Common throughout the region, but during the summer of 1915, it was observed that the species was unusually scarce. July 1, 1912, a female with a brood of eight or ten young was seen on the north shore of Clear Lake: August 5, a number of immature birds were seen in a bog one-half mile east of Lake Bald Eagle.

Cathartes aura septentrionalis Wied. TURKEY VULTURE. A single individual of this species was seen July 20, 1914, at the east end of the long rapids of the Kawishiwi river.

Circus hudsonius (Linn.). MARSH HAWK. In July, 1914, two hawks of this species were seen in the vicinity of Clear Lake, one at Rice Lake, August 22, and one at Lake Isabelle August 24. In 1915 two were seen at the mouth of the Isabelle river, July 14, and one at the west shore of Lake Bald Eagle on July 16.

Accipiter velox (Wils.). SHARP-SHINNED HAWK. Occasionally seen along the Isabelle river and adjoining territory. July 2, 1914, a female was shot on the North Kawishiwi-Clear Lake portage.

Accipiter cooperi (Bonap.). COOPER'S HAWK. August 14, 1914, one of this species was seen at Gabro Lake.

Buteo borealis borealis (Gmel.). RED-TAILED HAWK. July 16, 1914, a pair of Red-tailed Hawks was found nesting near the Gabro Lake outlet. The nest was situated in a tall dead birch, and the young were large enough to be plainly visible from the ground. August 4, 1915, two red-tailed hawks were seen along the Perent river.

Buteo platypterus platypterus (Vieill.). BROAD-WINGED HAWK. August 24, 1912, several were seen along the Isabelle river, at the second portage above Lake Bald Eagle, and August 4, 1915, a number were observed along the Perent river.

Falco columbarius columbarius (Linn.). PIGEON HAWK. August 19, 1912, a specimen was shot along the Isabelle river above the second portage; September 3, another was shot at camp at the first rapids of the Isabelle.

Falco sparverius sparverius Linn. SPARROW HAWK. In 1912, sparrow hawks were observed in the following localities: June 29, North Kawishiwi-Clear Lake portage; July 13, Gabro Lake portage; July 15, South Kawishiwi river; August 27, Lake Isabelle.

Pandion haliaetus carolinensis (Gmel.). OSPREY. July 18, 1912, a nest containing young large enough to be seen from the ground was found in a tall dead pine about a mile south and the same distance west from the forks of the Kawishiwi river. Both parent birds were at the nest. Three old nests were seen in the vicinity, the same pair of birds having probably nested in the locality for a number of years. On July 2 and 20 an osprey was seen at the long rapids of the Kawishiwi, and Aug. 14 a number were seen at Lake Gabro. In 1915 one was observed on the Perent river August 4, and one at the east shore of Lake Isabelle on August 31.

Bubo virginianus virginianus (Gmel.). GREAT HORNED OWL. Common. July 1, 1912, an adult female and one of her brood of three were shot on the south bank of the North Kawishiwi about two miles west of the Clear Lake portage. July 13 and August 3 adult birds were shot along the South Kawishiwi opposite Clear Lake and on an island near the southeast shore of Lake Bald Eagle, respectively.

Coccyzus erythrophthalmus (Wils.). BLACK-BILLED CUCKOO. One was seen on the North Kawishiwi-Clear Lake portage July 10, 1914; several had been heard since the first of the month. In 1915 one was heard July 3, in the same locality.

Ceryle alcyon alcyon (Linn.). BELTED KINGFISHER. In 1912 many Kingfishers were seen June 20, along the North Kawishiwi westward from the Clear Lake portage; on August 27 one was seen on the Isabelle at the second portage. My notes for August 9, 1915, state that one was seen at the east shore of Lake Isabelle, but that prior to that date only an occasional one had been seen in that region. After August 12, however, this species was seen daily up to our departure in September.

Dryobates villosus villosus (Linn.). HAIRY WOODPECKER. 1912: A specimen was shot June 24, in a mixed woods of spruce, pine and birch along the North Kawishiwi river near the long rapids; June 27 another was shot on the Clear Lake portage. 1914: A specimen was shot July 16, in the burnt-over hills bordering the South Kawishiwi near the Gabro Lake outlet. 1915: July 3, my notes refer to the hairy wood-pecker as numerous in the region of the Clear Lake portage.

Picoides arcticus (Swains.). ARCTIC THREE-TOED WOODPECKER. 1912: June 19, two specimens were shot among some tamaracs, one on the north shore of Clear Lake, the other on the shore of the North Kawishiwi. June 27 and July 26 a specimen was shot in dry open woods respectively on the North Kawishiwi-Clear Lake portage and on the bank of the North Kawishiwi opposite. 1914: July 16 one was taken on the burnt-over hills between the South Kawishiwi and the Gabro Lake outlet. 1915: Two were seen August 1 in open woods on the first portage of the Isabelle above Rice Lake.

Sphyrapicus varius varius (Linn.). YELLOW-BELLIED SAPSUCKER. July 1, 1914, a Yellow-bellied Sapsucker which evidently had nestlings was observed making frequent visits to a hole in a dead poplar on the east shore of White Iron Lake. July 5, 1915, a nest with young about half grown was found in the same locality:

Phloeotomus pileatus abieticola (Bangs). NORTHERN PILEATED WOODPECKER. June 18, 1912, one was seen on the North Kawishiwi-Clear Lake portage, and June 20 one was observed on the north shore of Clear Lake. During the remainder of June the species was seen occasionally along both the north and south forks of the Kawishiwi. In July, 1914, a specimen was shot at camp on the south fork near the Gabro Lake outlet.

Colaptes auratus luteus Bangs. NORTHERN FLICKER. 1912: June 12 and 22, Flickers were seen in the vicinity of the Clear Lake portage, and on the latter date a nest was found in this locality. 1915: July 3, two were seen on the Clear Lake portage, and on July 30 and August 4 several were seen respectively at Rice Lake and at Lake Isabelle.

Antrostomus vociferus vociferus (Wils.). WHIP-POOR-WILL. A single specimen was seen July 19, 1915, at the first rapids of the Isabelle above Rice Lake.

Chordelles virginianus virginianus (Gmel.). NIGHTHAWK. Abundant in the latter part of June and in July along the north and south forks of the Kawishiwi. July 8, 1914, two well edged young were found on the banks of the north fork near "Dead Man's Rapids," and in a nearby locality a third young one of about the same age was found. These young lay on a scantily moss-covered and stick-strewn rock outcrop in a district that had been burned over some years before.

Archilochus colubris (Linn.). RUBY-THROATED HUMMINGBIRD. July 13, 1914, one was seen at the first rapids of the Isabelle above Rice Lake; a number had been seen earlier in the month in the territory bordering the north and south forks of the Kawishiwi, August 31, 1915, a hummingbird was seen at camp on the east shore of Lake Isabelle.

Tyrannus tyrannus (Linn.). KINGBIRD. Frequently observed in June and July along the White Iron and both forks of the Kawishiwi rivers. June 20, 1912, a nest with four eggs was found along the North Kawishiwi half a mile east of the Clear Lake portage. July 26, 1915, a kingbird was seen along the Isabelle at Rice Lake.

Sayornis phoebe (Lath.). PHOEBE. Frequently seen along the South Kawishiwi in July, 1914; a young specimen was shot July 23. July 8, 1915, a female with young able to fly was seen on the Gabro Lake portage.

Nuttallornis borealis (Swains.). OLIVE-SIDED FLYCATCHER. In July, 1912, and 1914, this flycatcher was frequently seen and heard along the north and south forks of the Kawishiwi in the Clear Lake region; a specimen was shot August 8, 1914, on the Isabelle river above the first rapids. July 6, 1915, the Olive-sided Flycatcher was again heard in the Clear Lake region.

Myiochanes virens (Linn.). WOOD PEWEE. June 18, 1912, one was seen on the Clear Lake portage. In 1914 it was occasionally seen and heard along the South Kawishiwi during the month of July; on July 4 one was shot on the North Kawishiwi.

Empidonax flaviventris Baird. YELLOW-BELLIED FLYCATCHER. One was shot July 15, 1914, along the South Kawishiwi west of the Clear Lake portage.

Empidonax minimus (W. M. & S. F. Baird). LEAST FLYCATCHER. Several seen during July, 1914, along the Isabelle between the first and second portages.

Cyanocitta cristata cristata (Linn.). BLUE JAY. Common in all parts of the territory visited.

Perisoreus canadensis canadensis (Linn.). CANADA JAY. 1912: One was seen June 23, on the north shore of Clear Lake; August 19 several were seen along the Isabelle above the first portage, and August 24 two specimens were shot in this locality. 1914: The first specimen seen since entering the field July 1, was shot on the 23rd, at camp on the South Kawishiwi near the Gabro Lake portage. 1915: A Canada jay appeared at camp on the Clear Lake portage July 3; none was seen thereafter until August 4, a rainy day, when several of these birds appeared at our camp on the east shore of Lake Isabelle. Until we left this region on September 6, they were now seen frequently.

Corvus brachyrhynchos brachyrhynchos Brehm. CROW. 1912: Several were seen August 14, at Gabro Lake. 1914: July 1, several were observed at White Iron Lake and along the White Iron river; further east crows were seen only occasionally and in small numbers. 1915: July 3, two were seen at Gabro Lake August 1, two were seen near camp on the east shore of Lake Isabelle, and on the 5th two adults accompanied by young birds were seen in the same locality.

Agelaius phoeniceus phoeniceus (Linn.). RED-WINGED BLACK-BIRD. 1914: July 1 and 10, a small number of Red-wings, apparently nesting, were observed at some marshy places along the North Kawishiwi just above "Dead Man's Rapids." 1915: A few birds were seen in the first mentioned locality July 6; adults with young barely able to fly were found July 21, on a small creek entering the Isabelle about three-fourths of a mile above Lake Bald Eagle; July 26 a brood of young unable to fly was found at the outlet of Rice Lake.

Quiscalus quiscula aeneus Ridgw. BRONZED GRACKLE. 1912: June 20, a nest with young in pinfeathers was found along the North Kawishiwi just below the first rapids. 1914: July 6, small numbers, apparently nesting, and July 24 young birds were observed in the same locality.

Hesperiphona vespertina vespertina (W. Coop.). EVENING GROS-BEAK. 1914: A male and female were observed August 3, along the Isabelle river about two miles above Lake Bald Eagle; August 13, and

again on the 17, a male was seen near camp on the first portage of the Isabelle above Rice Lake. 1915: July 28 and 30, a male was seen at the Rice Lake outlet.

Carpodacus purpureus purpureus (Gmel.). PURPLE FINCH. 1914: In July a young specimen was shot on the South Kawishiwi near the Gabro Lake outlet: August 4 two of these finches were seen along the Isabelle two miles above Bald Eagle Lake, and on August 8 a specimen was taken in the same locality.

Astragalinus tristis (Linn.). GOLDFINCH. My only record is for July 27, 1914, when a male was observed at the Section 30 Iron Mine.

Spinus pinus pinus (Wils.). PINE SISKIN. In 1912 this species was found rather common during July, in the vicinity of Clear Lake, and along the South Kawishiwi.

Poecetes gramineus gramineus (Gmel.). VESPER SPARROW. 1915: A Vesper Sparrow was observed July 6 on the northwest shore of Clear Lake; July 10, a specimen was shot from among a number seen on the north fork of the Kawishiwi near its junction with the south fork.

Zonotrichia albicollis (Gmel.). WHITE-THROATED SPARROW. 1912: July 13, common along the South Kawishiwi and on the Gabro Lake portage. 1914: July 3, many observed along the North Kawishiwi and in the vicinity of Clear Lake; August 3, a nest containing two eggs and one newly hatched young was found on the second portage of the Isabelle above Lake Bald Eagle. 1915: July 1 and 3, White-throated Sparrows common along the White Iron River.

Spizella monticola (Gmel.). TREE SPARROW. One was observed July 18, 1915, on the west shore of Lake Bald Eagle.

Spizella passerina passerina (Bech.). CHIPPING SPARROW. One observed August 4, 1915, on the east shore of Lake Isabelle.

Junco hyemalis hyemalis (Linn.). SLATE-COLORED JUNCO. 1912: July 23, a specimen was shot on the North Kawishiwi-Clear Lake portage. 1914: Several were seen July 17 and 19 near the Gabro Lake outlet.

Melospiza melodia melodia (Wils.). SONG SPARROW. 1912: Many seen June 18 and 20 in the vicinity of the North Kawishiwi-Clear Lake portage. 1914: July 7, a specimen was shot in the same locality.

Zamelodia ludoviciana (Linn.). ROSE-BREASTED GROSBEEK. 1914: A male was seen July 1 at White Iron Bridge; another male was seen July 7 on the Clear Lake portage. 1915: A male and female were seen in the last named locality July 3, and a male again on July 6.

Piranga erythromelas Vieill. SCARLET TANAGER. 1914: A male was seen July 8 at the North Kawishiwi-Clear Lake portage, and another at White Iron bridge, July 27. 1915: A male was observed July 4 at the North Kawishiwi-Clear Lake portage.

Iridoprocne bicolor (Vieill.). TREE SWALLOW. 1912: A nest was found June 22 in a hollow tree in the flooded area of the North Kawishiwi below the first rapids. The species was abundant along the river men-

tioned, as far as the first rapids which marked the limits of a flooded area in which dead timber furnished numerous nesting holes. 1915: July 5 a nest containing well-fledged young was found near the site of the first mentioned nest. July 21 Tree Swallows were observed flying about in great numbers over the small tributary of the Isabelle just below the first rapids.

Bombycilla cedrorum Vieill. CEDAR WAXWING. 1912: Common along the north and south forks of the Kawishiwi and in the vicinity of Gabro Lake, during the months of June and July. June 28 a Cedar Waxwing was observed on its nest in a pine near the long rapids of the North Kawishiwi.

Vireosylva olivacea (Linn.). RED-EYED VIREO. 1912: June 18 and 20 many were seen and heard in the Clear Lake region. 1914: Very common in the same locality; July 25 a Red-eyed Vireo was found on a nest containing three eggs, situated in a young birch tree on the shore of the South Kawishiwi near the Clear Lake trail. 1915: During early August the Red-eye was heard at intervals along the Isabelle river in the Rice Lake region and on the 18 one was seen at Lake Isabelle.

Lanius solitarius solitarius (Wils.). BLUE-HEADED VIREO. July 24, 1914, a female was shot at camp on the South Kawishiwi below Gabro Lake outlet.

Mniotilta varia (Linn.). BLACK AND WHITE WARBLER. 1914: July 20 a male was shot at camp on the South Kawishiwi. 1915: July 15 one was observed near the mouth of the Isabelle river.

Vermivora peregrina (Wils.). TENNESSEE WARBLER. 1914: One was taken July 8 and one July 10 near the Gabro Lake outlet.

Dendroica caerulescens caerulescens (Gmel.). BLACK-THROATED BLUE WARBLER. July 17 a male specimen was shot from among several of this species accompanied by chickadees, in a grove of spruce and pine on the north bank of the South Kawishiwi near the Gabro Lake outlet, on August 21 another male was taken along the upper course of a small stream entering Rice Lake on the east shore. 1915: A male was observed August 30 on the east shore of Lake Isabelle.

Dendroica coronata (Linn.). MYRTLE WARBLER. A young specimen was taken July 16, 1914, on the burnt-over hills bordering the South Kawishiwi near the portage to Gabro Lake.

Dendroica magnolia (Wils.). MAGNOLIA WARBLER. 1914: July 16, a male specimen was shot in dense woods along the South Kawishiwi near the Gabro Lake outlet; the species had been seen a number of times since the first of the month. 1915: A male was observed August 4 on the east shore of Lake Isabelle.

Dendroica pensylvanica (Linn.). CHESTNUT-SIDED WARBLER. 1914: A pair was seen July 1 at White Iron bridge; July 2, the species was frequently observed along the North Kawishiwi eastward as far as the Clear Lake trail; July 13, this warbler was seen again on the Gabro Lake trail. 1915: Several were observed July 5 at White Iron bridge.

Dendroica fusca (Müll.). BLACKBURNIAN WARBLER. 1914: Two were observed August 15 on the first portage of the Isabelle above Rice Lake. 1915: August 17, several were observed in a grove of spruce on the east shore of Lake Isabelle.

Dendroica vigorsii (Aud.). PINE WARBLER. A specimen was shot August 15 at camp on the Isabelle river portage above Rice Lake.

Seiurus aurocapillus (Linn.). OVEN-BIRD. 1914: One was observed July 6 on the North Kawishiwi-Clear Lake portage; had been heard several times in that locality since the first of the month. 1915: One was seen August 16 on the east shore of Lake Isabelle, and September 7 two were heard on the Clear Lake portage.

Seiurus noveboracensis notabilis Ridgw. GRINNELL'S WATER-THRUSH. July 4, 1914, a male specimen was shot along the south bank of the Kawishiwi about two miles east of Farm Lake.

Oporornis philadelphia (Wils.). MOURNING WARBLER. One was seen July 3 on the north shore of Clear Lake, and July 23 a male specimen was shot at camp near the Gabro Lake outlet.

Geothlypis trichas trichas (Linn.). MARYLAND YELLOW-THROAT. 1912: June 17 to July 4 several were seen on and about the North Kawishiwi Clear Lake trail. 1914: August 11 a number were seen along the Isabelle river above the first portage. 1915: July 21 several were seen along the tributary stream near the mouth of the Isabelle; July 26 a male was seen at a small stream entering the Isabelle about a mile and a half below Rice Lake.

Setophaga ruticilla (Linn.). REDSTART. July 1, 1914, a male and female were seen at White Iron Bridge, and August 15 a female was seen near the outlet of Gabro Lake.

Troglodytes aedon aedon (Vieill.). HOUSE WREN. June 20 and July 15, 1914, the House Wren was found to be common along the north and south forks of the Kawishiwi in the Clear Lake region.

Nannus hiemalis hiemalis (Vieill.). WINTER WREN. August 6, 1914, a specimen was shot at the third portage on the Isabelle above Lake Bald Eagle; another was seen in that locality August 14.

Certhia familiaris americana (Bonap.). BROWN CREEPER. August 15, 1914, several were seen on the first portage of the Isabelle above Rice Lake.

Sitta canadensis Linn. RED-BREASTED NUTHATCH. 1914: July 25 a female specimen was shot at the narrows of the South Kawishiwi southwest of the Clear Lake trail. 1915: August 11 this species was several times seen in the region of Lake Isabelle.

Penthestes atricapillus atricapillus (Linn.). CHICKADEE. Common throughout the region. Observed on North Kawishiwi-Clear Lake trail, July 5 and 6; one specimen was shot on the Gull Lake trail August 18, 1914.

Penthestes hudsonicus hudsonicus (Forst.). HUDSONIAN CHICKADEE. 1914: One specimen was shot August 18 midway on the Gull

Lake trail, August 21 another was taken from among a flock of several along the small stream entering Rice Lake from the east.

Regulus satrapa satrapa Licht. GOLDEN-CROWNED KINGLET. July 22, 1914, a male specimen was shot on the east shore of Lake Isabelle.

Hylocichla ustulata swainsoni (Tschudi.). OLIVE BACKED THRUSH. 1912: Common in the region about Clear Lake during latter June and early July. 1914: Frequently seen and heard again in the first mentioned locality; August 21 an Olive-backed Thrush was caught in a mouse-trap set under an old log in deep woods at the first rapids of the Isabelle above Rice Lake. The same day another specimen was shot at a small lake one mile east of Rice Lake.

Hylocichla guttata pallasi (Cab.). HERMIT THRUSH. Common in the region about Clear Lake during July, 1914. On the 7th a nest with four eggs was found by one of my companions, Prof. N. L. Huff, in a small sphagnum bog sprinkled with low spruces and tamaracs, along the old unused portage trail around the first two rapids of the North Kawishiwi river. July 11, a male bird was shot on the Clear Lake trail opposite these rapids.

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IN THE HAUNTS OF CAIRNS' WARBLER

BY C. W. G. EIFRIG.

EVERY ornithologist, professional or otherwise, knows with what joyous anticipation one from time to time returns to the scenes of former explorations. There is a halo of romance around the places and the time of one's early efforts in ornithology, where his first love and enthusiasm led him forth on many trips, always eager, expectant, and on the verge of new discoveries. This was the writer's state of mind, when June 14, 1918, he once again found himself at Oakland, near the south-western corner of Maryland, in the so-called glade region of the Maryland Alleghanies, his ultimate goal being Accident, a quiet hamlet about twenty miles north, but still in Garret County. Nature had on her most engaging smile as I set out for my destination over the fine new state road, that connects Oakland with the Old National Pike at Keyser's Ridge. A walk or drive over this road reveals the

beauties of this charming region; it winds through fine woods, showing quite a different type of vegetation from the prairies around Chicago, then it runs along the hillsides giving one glimpses of small farms, changing off with tamarack, spruce and alder swamps in the valley, and beyond that, line upon line of the peculiar long-drawn out hills and mountains of the Alleghanies, stretching out to the horizon in bewildering fashion, until lost in blue haze. The shallow valleys here are from 2000 to 2400 feet above sea-level; the surveyor's plug before my host's house at Accident shows 2395 feet, while the highest hill nearby, Georges Hill, is marked 3004 feet. To a westerner this will seem a negligible elevation, but it is here enough to produce Canadian conditions of climate; just a little lower down along the stream valleys are of course distinctly southerly conditions, producing an overlapping and odd intermingling of Canadian and Carolinian faunae and florae, an eldorado for the nature-lover and naturalist. As there is also an abundance of pure, cool air, and a dearth of mosquitoes, it is at the same time an ideal region for the tired vacationist from the large cities.

To see what changes, if any, would be observable here since my former rambles over this region, and to add new species, if possible to my list of 'Birds of Allegany and Garret Counties' (Auk, Vol. XXI, pp. 234-250; XXXII, p. 108, etc), the next month was spent in tramping over the hills and prowling through the ravines and thickets of this section, and through those of the neighborhood of Cumberland, Allegany County. In company with a friend, who is at once a mountaineer, keen observer and student of nature, I would set out early in the morning and return in the evening tired and bedraggled, but happy.

In the cool, dark ravines along the brooks, as well as on the mountain tops, where a primeval stand of tall white pine, black spruce and hemlock is still found in a few places, and where the rhododendron flourishes, is the favorite habitat of Cairns' Warbler (*Dendroica c. cairnsi*). In my last communication on this region (Auk, XXXII, pp. 108-110), I had expressed my conviction that this subspecies should be eliminated from the 'Check-List' as indistinguishable from *D. c. caerulescens*, but I am now "fully persuaded." The females are more distinguishable than the

males, although the difference is so slight, that the bird must be had in the hand to appreciate it. Here, in the mossy, fern-covered banks under the rhododendron, as well as in its almost impenetrable thickets the nests are located, and here the song, a rapid, explosive, ascending *dill dill dree*, may be heard on all sides. This song is indistinguishable from that of *D. c. caerulescens*.

In the same places, but staying higher up in the tall hemlocks above the rhododendrons, the Black-throated Green Warbler holds forth, here as during migration, a companion of the Black-throated Blue. But since subspecies must be made, here it seems is where a new one should be introduced. Since my first visits to this region about 1900, I was struck by the dingy appearance and small size of most of the males, though some were of normal, intense coloration. At first, I ascribed it to wear and moult, but in June warblers are at their best in appearance, and furthermore, the olive on the back seems darker, while the song is weaker. So here are differences that can be perceived when the bird is in bush or tree.

In the same habitat is found the Magnolia Warbler, only in smaller numbers. Its song here as in Canada, sounds to one like *weetsi weetsi weetsi*, accent on the next to last syllable, whereas *D. virens* seems to say *dee dee dee ah di*, accent on the antepenult.

Even less abundantly than the Magnolia is found the Blackburnian Warbler (*D. fusca*), in the same habitat. It is especially partial to the tops of hemlocks. On the 15th of June, we saw a male gathering nesting material on the edge of the much traveled state road, at Bear Creek Hollow. We watched it and saw that he took it into a hemlock, about 35 feet up, ten feet out on a large, horizontal limb, where with the glasses we could make out the form of a tiny nest. A week later we got it down with much labor, only to find it empty. It is built of the thinnest dry twigs of hemlock, a little bast and fiber, and lined with horse hair; its diameter is three and a half inches over all, the cup one and three quarter by one and a half inches deep. The song of the Blackburnian is low and remarkable for its nasal and ventriloquial quality. One sang a monotonous *tsi tse tse tsnnn*, another *dell dell dell tsit tsit tsitnn*, sometimes tender then again strangely muffled.

A distinct surprise among the warblers was furnished by the Canada Warbler. Since my last visit four years previously it

had increased strikingly in numbers. During a brief walk on the afternoon of my arrival, we saw and heard about twenty in the same habitat as the preceding four species, and everywhere we went we found it common, in all kinds of woods, evergreen and hardwood, second growth brush, along creeks and on dry mountain crests. Their coarse, loud, unwarbler-like alarm note was one of the commonest sounds heard. Many were carrying food, showing that the young were already out of the eggs. The old birds would fly closely about one, with their sparrow-like chirp, scolding the intruder out of their nesting range. Similarly obtrusive and solicitous were the Ovenbirds, likewise found in all kinds of woodland habitat.

Two warblers had moved in since my last visit, the Yellow-breasted Chat, and the Golden-winged Warbler. Two pairs of the former had taken up their stand in small brushy second growth, where the primeval pine, spruce and hemlock had been cut out, moving in from lower down, where it is common. A pair of the Golden-wings were observed in Kolb's Hollow, having also followed the clearings. This is a good instance of how man's interference with and changing of natural conditions promptly influences flora and fauna.

In the fringe of alders along Bear Creek and in swampy corners of the farm, the Maryland Yellow-throat can be heard, and along the creeks the two Water-Thrushes are found, *Seiurus motacilla*, and *S. n. noveboracensis*. One of the former we saw carry food. Besides these, the Chestnut-sided Warbler is common, in the same places as the Canada and its song *wi di di dereea* almost becomes monotonous. The Yellow Warbler, however, is rare; I noticed only one pair and those in my host's orchard, where one of them sang once as late as 9 o'clock in the evening.

In the same place where the odd notes of the Chat were first heard, a Catbird struck up its song and amused us greatly by suddenly weaving in the call of the Whip-poor-will. This was the only time that I heard the Whip-poor-will song during my stay, whereas formerly the hollows and hillsides resounded with it every evening. There is a sad decrease in the numbers of this bird, and I may add, the same holds good for all places where I have been of late years, in Indiana, Michigan, and Illinois, every-

where a decrease from former numbers. Let us hope that it has correspondingly increased elsewhere in its range. The Brown Thrasher, Red-eyed Vireo, and Wood Pewee also seemed much less common than formerly.

Prairie Horned Larks are not uncommon breeders here. They are absent in summer below 2000 feet. A pair could usually be seen at certain places on the roads, always at the same ones. Of flycatchers the Crested is found, the Kingbird more commonly, and each orchard generally harbors one pair of the Least, also a pair of Baltimore Orioles. Bobolinks are more numerous now than formerly, as it is to be expected when agriculture spreads out at the expense of the forest. At Thayerville, at the house where President Cleveland spent his honeymoon, an Alder Flycatcher was seen in the alders lining Deep Creek. The former Lake Cleveland has disappeared and is changed into fields. Meadow-larks are common, Redwings, less so, because cattail swamps are absent; and they have to frequent the alder-bordered natural meadows. A nest of a pair was found 20 feet up in an apple tree in an orchard adjoining one of these meadows. Nearby the call of the Kingfisher could be heard over Bear Creek, as well as the song of the Cardinal.

One of the commonest songs here now is that of the Scarlet Tanager. It frequents the tops of wooded ridges, from where its strident notes could nearly always be heard, but sometimes is found in the woods on the slopes and even in hollows. It is decidedly on the increase.

In the finch and sparrow tribe, the Goldfinches are common, Indigo Buntings not rare, Vesper, Song, Field and Chipping Sparrows plentiful. With three Vesper Sparrows we had a unique experience. Coming home one evening from where I had forgotten my glasses under the Blackburnian's nesting tree, a new song made us stop below a Vesper Sparrow on a telephone wire. It was loud and musical, entirely different from the usual Vesper performance. A day or two later, on the road to Negro Mountain, I heard the same song from one of the same species, and a little farther on another one. I made sure it was the Vesper Sparrow but the song was plainly that of Bewick's Wren! My theory is that a family of Vespers was raised near the nest of a

Bewick's Wren, where they heard that bird's song all the time and learned it instead of their own. We met with no Bewicks this time, but a few are here, at least were until lately. The House Wren is increasing in numbers, and very probably Mr. Ridgway is correct when he says that the House Wren drives out Bewick's Wren. The colony of Winter Wrens, which we discovered in 1914 on Negro Mountain, was no longer there. Grass-hopper Sparrows are common in alfalfa and timothy fields, as are the Towhees in the brushy second growth on the hills.

The most interesting member of the finch tribe here is the Carolina Junco, which also seems to me to be growing less common. Still it can not be called rare. It is equally distributed over the rocky slopes and tops of mountains, as well as in mossy hemlock stands, but not below about 2500 feet. Families of old and young were seen, the young being heavily streaked on the breast, something like young Chipping Sparrows. While watching the noisy antics of a pair of Ovenbirds on the road to Negro Mountain, a Junco dropped out of her nest in an invisible pocket in the low bank, opposite where a road had been cut along the hillside. The nest under overhanging roots and moss contained three eggs in the morning, in the afternoon, when I returned, only two, so I took it along. The nest, made of moss, lichen and a few plant stems on the outside and rootlets and horse hair on the inside, measures five inches in diameter, the cup two and three quarter by one and a half inches deep. The eggs are pale bluish, with a wreath of pale lavender and brown spots near the thicker end, much like those of *J. h. hyemalis* in Canada. These pockets in low or higher banks along wood roads are characteristic nesting places, also for the northern form and the nest would rarely be found, if the owners would not drop out of them and fly away at one's approach. I never found a nest on the level, chestnut-covered tops of the mountains. The song of the southern form is more sonorous and alto than that of the northern, it sounds much like the second part of the song of the Towhee. They breed twice in a season.

Of the woodpeckers we saw a few Hairy, Downy, and Red-headed, also Flickers and Yellow-bellied Sapsuckers. The Pil-eated and Redhead are decreasing in numbers. Mr. F. Burk-

hard, my companion, told me that during or after a late snow-storm in the previous April, several Flickers had been found dead, showing that even such a large and hardy species sometimes succumbs to inclement weather.

Raptors are decidedly rare here, because people shoot all they can. We saw only two Redtails in Glotfelty's primeval piece of timber in Negro Mountain, where we have seen them at each visit, probably always the same pair. Twice I saw a Sharp-shinned Hawk furiously pursued by a Kingbird, that fairly screamed with rage. Turkey Vultures are still common. The old hollow logs and the many cavities between the rocks along the tops of the mountains offer good nesting sites for them, and the sheep, killed by roving dogs, no doubt furnish them with sustenance.

Among gallinaceous birds the Ruffed Grouse is still fairly common. Once we startled several, together with a Rose-breasted Grosbeak, out of a large shadbush, where they had been busily feeding on the luscious berries. I was told that foxes are a great scourge to the Grouse, killing quite a few on the nests or at least destroying the nests. The Bobwhite has sadly dwindled away; we heard its call only once, and the Wild Turkey is almost gone.

Since there are no water bodies here beside the bush-covered creeks, there are few water birds to be found. At two small artificial ponds I saw a family of Killdeer and a Spotted Sandpiper. In the house of the owner of one of the ponds, I saw mounted specimens of Pied-billed and Horned Grebes, as well as a Lesser Scaup, which occasionally drop into the pond during migration.

The only addition to the avifauna of the region covered by the list in volume XXI of 'The Auk,' was made at Cumberland, whither I went from Accident. The old trails on Savage Mountain to Wolf Gap and Finzel, on Will's Mountain to the Mason and Dixon line and others, added the warblers of the lower country to the list, such as the Hooded, Worm-eating, Prairie and Pine Warblers, and the Redstart, which should have been met with in the mountains, also Cooper's and the Broad-winged Hawk. The Swan Ponds—not Swamp Ponds as given in my former list—on the West Virginia side of the Potomac, I found ditched and drained and turned into corn fields. However, we found a family

of Upland Plovers there. Thus does man's activities play havoc with the finest natural homes of certain species of birds. The colony of Ravens, formerly located in the romantic Rocky Gap, six miles east of Cumberland, was also no more. As if to mitigate this disappointment, however, I found on July 9, a family of Blue Grosbeaks (*Guiraca c. caerulea*) on Knobley Mountain, making at least one species, and that an interesting one, to be added to the birds of western Maryland.

Oak Park, Illinois.

PATTERN DEVELOPMENT IN TEAL.

BY GLOVER M. ALLEN

AN article by Mr. Frederic H. Kennard in 'The Auk' for October 1919, describing and naming the Southern Blue-winged Teal as a distinct subspecies, brings out a point of considerable evolutionary interest, which it seems to me is worth emphasizing. The chief mark of the newly recognized race is the presence of a white superciliary stripe continuing the white crescent between the eye and bill, characteristic of the common Blue-winged Teal, and the two stripes, one on each side, meet at the back of the head and are continued medially to form a white nuchal patch of varying extent. This unusual extension of the white crescentic mark is found in the adult males only and is characteristic of the completely developed nuptial plumage in the Southern birds. A similar, though often irregular line, is sometimes seen in partially white domestic pigeons and ducks.

The formation of a definite pattern of pigmented (*i. e.*, colored) and pigmentless (*i. e.*, white) areas, particularly in birds and mammals, is a subject which has greatly interested me, and in an article in the *American Naturalist* (vol. 48, p. 385-412, 467-484, 550-566, 1914) I have endeavored to establish that in these two classes of vertebrates, white markings when present tend to occur in certain definite places. This is due to the fact that the surface

of the body may be divided into some eleven areas from whose individual centers the tendency to produce pigment in the epidermal structures (hair or feathers) tends to become less and less as the periphery of the particular area is reached. These areas may bear some as yet unrecognized relation to the distribution of nerves. The borders of contiguous areas may overlap, and the details of their topography in different mammals and birds may vary, but in general their outlines are fairly definable as follows:

(1) a median *crown patch*, in birds pigmenting the top of the head from base of beak to occiput above the eyes; (2) an *ear patch* on each side covering the side of the head and upper throat from the level of the eye to the median line above and below; (3) a *neck patch* on each side pigmenting the area from the upper throat to the shoulders; (4) a *shoulder patch* on each side pigmenting the feathers of the wing and a narrow area at its base from center of back to center of breast; (5) a *side patch* on each side of the body which includes the area from shoulder to rump; and (6) a *rump patch* on each side which pigments the posterior end of the body, the tail, and most or all of the hind leg. These patches are outlined in the accompanying diagram (Fig. 1). I have called these color areas primary patches. They may break up further to form complex patterns.

The definition of these patches is sometimes complicated by two (or three?) other types of pigmentation which in some species co-exist with this *centripetal* type—namely, a diffuse pigmentation from many small independent centers, producing the spotted effect seen for example in the Dalmatian Coach Dog, and a *centrifugal* type, which produces black “points” at tips of nose, ears, limbs or tail in certain species. A black median area on the spine is perhaps a manifestation of this same type. These three types of pigmentation behave differently in heredity and have been studied lately by several geneticists. It is likely that the median crown patch, very small in mammals, may really consist of two bilateral centers, here in close juxtaposition for in birds it is frequently divided by a white median line, though in the few mammals where I have seen it (*e. g.*, dogs) it is not so divided.

From a study of pied individuals of species which normally have complete pigmentation, it is found that the white markings

tend to occur at the peripheries of the pigment centers as above defined, and result from the failure of pigment to develop at the edges of these centers. The more the pigmentation is restricted, the greater is the amount of white between the respective centers. If each patch or center were to be *slightly* reduced, a series of five pigment spots on each side, and one on the crown would result, bounded by white lines—a median white line from the occiput to tail, and cross stripes separating the five patches of each side. A much greater but regular restriction of each patch would result in reducing the pattern to a series of five small spots on each side with a single median one on the crown; and still further reduction brings about a pure white condition with black eyes—(possibly

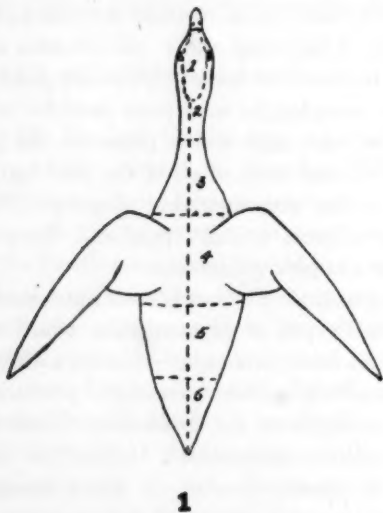
**1**

Figure 1.—Diagram showing chief pigment areas of a bird's body, from above.

the eyes being in part of ectodermal origin, should themselves be regarded as an additional pair of pigment centers). Such white animals with black eyes occur as artificial breeds in a number of species, and on account of their possessing a potential pigmentation, act as pigmented individuals in crosses with true albinos which do really lack the pigment-producing factor. Actually there is great variation in the amount of reduction, for not only

does each spotted individual differ in the extent of its pigmented areas, but corresponding areas of opposite sides vary in the amount of reduction in the same individual, so that often the contiguous patches of one side may show a white break between them, while those of the opposite side retain contact.

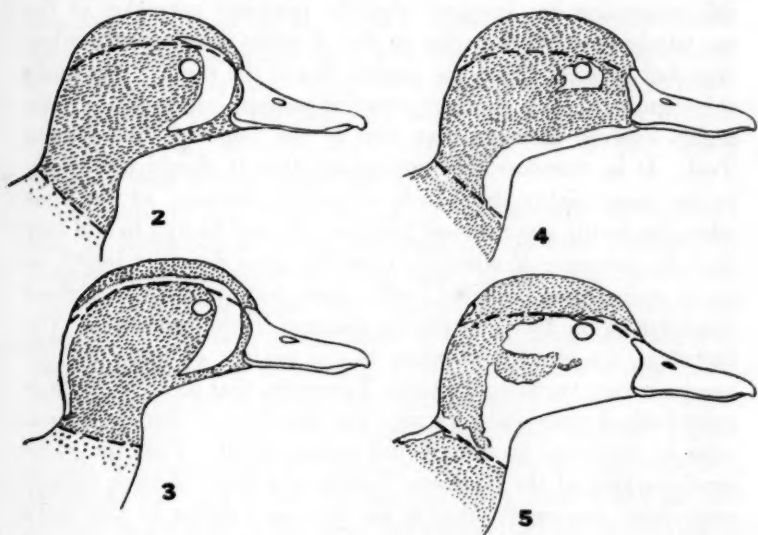


Figure 2.—Head of Blue-winged Teal, to show pattern. In this and the other heads, the approximate outline of crown patch and the boundary between ear and neck patches, are shown by a heavier dotted line.

Figure 3.—Head of Southern Teal, showing extension of white pattern through restriction of ear patch dorsally and posteriorly.

Figure 4.—Andaman Teal (*Polionetta albigularis*) showing slight reduction of ear patch.

Figure 5.—White-cheeked Andaman Teal (*P. a. leucopareus*) showing incomplete formation of a white collar by failure of ear patch to meet the upper end of neck patch.

But to return to the Teal, the point of interest is that the white crescentic mark of the normal bird is due according to this view, to a restriction of the ear patch (whose ultimate center is the aural region) at its front end, so that a pigmentless area is left at the base of the bill (Fig. 2). The head pattern of the common Blue-

winged Teal has developed no further. In the Southern Teal, however, (Fig. 3) a further restriction of the ear patch has taken place, producing a complete line of separation between it and the crown patch, so that a white superciliary line results from the failure of these two patches to develop pigment at their common border; and in those individuals that show a white nuchal area, this restriction has involved also the posterior extension of the ear patches of opposite sides so that a white streak results when they fail to meet along the median line of the neck. Obviously this condition, with its more complex pattern, represents a more highly evolved plumage than that of the Common Blue-winged Teal. It is, therefore, not unexpected that it should occur only in the most highly developed or nuptial plumage, at the time when the bodily vigor is most intense. It may be well to add here that the presence of albinistic or white areas does not imply, as many suppose, an impaired bodily vigor, but merely a specialized condition of the factor producing pigment in the epidermis. The fact that the amount of white in the pattern of many natural species is very variable, indicates, I presume, that its areal development has not come under a strong selective force so that the boundaries of the white areas have not become fixed. That the white head-marking of the Southern Teal is of a fairly definite nature, may show, conversely, that it *has* become a factor in this bird's welfare and is tending to be symmetrically developed as part of a definite pattern. For this reason the extension of the usual white area is of value as a diagnostic mark of the more southerly breeding Teal.

On my expressing to Mr. Kennard an interest in this bird, he has kindly called my attention to an observation of Mr. Stanley C. Arthur (since published in 'The Auk') who has for three years past kept in confinement in the flying cage of the Audubon Park, New Orleans, one of these Southern Teal, showing the characteristic "necktie" marking. In the spring following its capture, this drake molted into the nuptial plumage, but the white superciliary line and nape patch seemed less definitely white than Mr. Arthur's recollection of them the year before. In the next year, however, when the bird again assumed its spring plumage, neither the white line nor the white nape patch was apparent. The bird's

death occurred shortly after, in April of that year. This interesting case only serves to emphasize still further that this "necktie" pattern is a newly acquired character in the phylogeny of the race, and in the growth of the individual is assumed at the time of its highest physiological development. The fact that the captive bird finally lost this marking may have been due to impaired vigor, either as a result of old age or as a result of the abnormal conditions of captivity, which as is well known, nearly always result in interrupting the usual course of physiological processes. If due to senescence, it is paralleled by numerous other cases in both vertebrates and invertebrates. A familiar one is the "going back" of deer antlers in old males.

The Southern Teal is not the only duck that might be cited as a case of formation of a distinct geographical race through the differential development of white areas in the plumage by restriction of pigmentation. Mr. Outram Bangs has called my attention to the case of the Teals of the Andaman Islands, *Polionetta albigularis*, in which (Fig. 4) the ventral side of the throat and a spot just below the eye are white, showing thus only a slight restriction of the ear patches ventrally and about the eye. In one of two specimens from the same locality, however, white feathers appear at the base of the bill, and the white mark below the eye is much larger than in the other, indicating that the pattern is still in an unstabilized condition. The development of white areas thus begun, is carried still further in the race *P. a. leucopareus* from North Reef Island, in the same group, in which the restriction of the ear patches is so extensive (Fig. 5) that the upper throat and side of head to the level of the eye are white as far back as the ear opening, and a white collar has resulted through failure of the ear patch to reach the upper edge of the neck patch. Behind the ear, the crown patch is still united with the ear patch except at the occiput, where a very small white spot occurs in one of the two specimens seen. One might conceive of a further stage in evolution of this pattern, whereby the crown patch would persist intact, but the ear patches dwindle perhaps to a very small spot over the ear opening. Such a pattern is found in the Old-squaw female in winter. A subsequent loss of the crown patch would then leave a head pattern similar to the adult male Old-squaw.

Dr. John C. Phillips tells me that the Congo Teal shows very beautifully in a series of specimens from the same general region, a variation in the degree of restriction of the individual pigment centers. The common Mallard as I have shown in the article above cited (*Am. Nat.*, 1914, vol. 48, p. 483) frequently shows under domestication, the development of white superciliary lines that correspond in position with white areas which have in other species become a permanent part of the pattern. The normal male Mallard has in the fully developed plumage, a white collar at a point bounding the upper limit of the wine-colored neck. This is merely the development of a white area at the point of contact between the ear patches covering the sides of head and upper throat, and the neck patches pigmented the lower throat. (Here the two sets of patches are of different colors.) In the domesticated Black Mallard this white ring is often absent, on account of the complete development of the two sets of pigment patches. I have also seen a female Mallard in which a white half-ring was present as an albinistic spot in just the place where it is completely developed in the male, showing that this is one of the contact points between two pigment centers, a place of least color formation, where, if restriction of pigment areas takes place, a white mark will first result. Indeed the Anatidae seem especially favorable for a more intensive study of this method of pattern formation, and well merit special investigation as to the development and transmission of partial pigmentation. Already careful studies of rats, mice, guinea-pigs and rabbits have been made by geneticists on these lines, and it is to be hoped that comparative studies on birds will follow.

Boston Society of Natural History, Boston, Mass.

NOTES ON THE BIRDS OF SOUTHEASTERN NORTH CAROLINA.

BY EDWARD FLEISHER

DURING the week beginning April 13, 1919, I visited that section of North Carolina lying between Wilmington and the mouth of the Cape Fear River, thirty miles to the south. Throughout this region the soil is sandy, with here and there muddy bottoms in which grow the great bald cypresses and live oaks with their draperies of *Tillandsia* "moss." The coastal region at the mouth of Cape Fear River, and, more particularly, Smith's Island, approach the sub-tropical in both climate and flora. Here such trees as the cabbage palmetto, the magnolia and the prickly ash are found. Many of the Smith's Island palmettos, however, were killed or injured in the cold winter of 1917-1918.

Smith's Island, off the mouth of the Cape Fear River, is roughly in the shape of an arrow, the point of which, Cape Fear, is the southernmost point of North Carolina and at about the latitude of Atlanta, Ga. The flanks of the arrow consist of sandy beaches of a total length of about fifteen miles. In the central part are extensive grassy marshes bordered by dense woods. One end of the beach terminates in a narrow spit of sand separating the ocean from Buzzard's Bay. It is here that the sea birds formerly nested, though I doubt whether they still do so in large numbers, as herds of semi-wild cattle wander over the island and their tracks can be seen in the sand.

On the east side of Cape Fear the sea is gradually cutting into the woods, and the shore presents a wild aspect. The beach is covered with a tangled mass of prostrate and semi-prostrate trees, and the breakers seethe about those still standing. Here and there, lagoons of salt water are bordered and dotted with gaunt trees.

It was on top of one of these trees that I discovered a Roseate Spoonbill (*Ajaia ajaja*), a thorough surprise and the best find of the trip. I had the bird under observation for only two or three minutes, though of course there was no mistaking him after the

first glance. I was rounding a "point o' woods" on the beach early in the morning of April 15 when I caught sight of a great pink bird about 100 yards away. I had barely time to feast my eyes on him through my 8-power binoculars when he discovered me and flapped off, flying directly past me toward the sea, then turning and making for another part of the island. According to Chapman, these birds in the eastern United States, are "confined to the most inaccessible swamps in Florida." However, when I told Captain Willis of the Smith's Island Life Guard Station of my find, he said that he had seen two of these birds "last summer." He could not remember just when, but he gave me a good description of the birds and a circumstantial account of the conditions under which he had seen them. They had impressed him as they were the only large pink birds he had ever seen on the island.

The only herons observed on the island were the Great Blue Heron (*Ardea h. herodias*), the Louisiana Heron (*Hydranassa t. ruficollis*) and the Little Blue Heron (*Florida caerulea*), a few of each; and there were no indications that herons had nested there recently. Although I saw eleven species of Limicolae, it was apparently too early for large flocks like those that occur on Long Island, New York, a few weeks later. Nor did I realize my expectation of meeting the great north-bound army of warblers and other migrants. In fact, with few exceptions the transients observed were those that usually occur in the latitude of New York during the last week in April, *i. e.*, about a week later.

Rivalling Smith's Island in interest for me was my trip to the heronry on Orton Lake. Lying about midway between Wilmington and the mouth of the Cape Fear River is this beautiful body of water with its temples of buttressed cypress trees. The owner of the lake, a typical Southern gentleman, takes great pride in his herons, and I was not at all offended when he told his colored servant, who was to be my guide, not to leave me alone with the birds. I must have been rough-looking in my dusty clothes and knapsack. Accompanied by two servants and the ubiquitous Ford, I was quickly driven to the edge of the lake and then rowed and poled between trees. The heronry, or what I saw of it, consisted of two parts: The Great Blue Herons and some of the

Egrets (*Herodias egretta*) in one place and the smaller herons in another. All except the Snowy Egrets (*Egretta c. candidissima*) were busy with nesting. The young of the Great Blue Herons could be heard calling from the nest in the tops of the taller trees. The Egrets were sitting, and in their part of the lake the little Blue and Louisiana Herons left off their nest-building operations to scold us at our approach. Some of the nests in the small trees about us had their clutches of blue eggs, but as no birds approached the nest near us I was unable to determine to which species the eggs belonged. A conservative estimate of the number of each species seen is the following: Great Blue Heron, 150, Egret, 20, Snowy Egret, 8, Louisiana Heron, 50, Little Blue Heron, 75, Black-crowned Night Heron (*Nycticorax nycticorax naevius*), 1. The actual number of herons in the lake area was probably much greater than these numbers would indicate.

In answer to a question, I was informed that "Dey all goes away in winter, excuse a few of de big ones."

I spent practically all the daylight hours during the week in the field. With the exception of a few light showers one day, the weather was most favorable, though usually very warm.

In the annotated list which follows, I give a conservative estimate of the total number of individuals of each species seen during the week.

Gavia immer. LOON. One individual seen in Cape Fear River, April 15.

Larus argentatus. HERRING GULL. Three, off shore.

Larus atricilla. LAUGHING GULL. Nine of these birds were seen, most of them on the river.

[**Sterna maxima.** ROYAL TERN (?). A large tern seen off shore appeared to be of this species.]

Sterna antillarum. LEAST TERN. With the exception of the above, these were the only terns observed. There were about 150 of them on the beaches of Smith's Island, April 14 to 16.

Rynchops nigra. BLACK SKIMMER. A compact flock of 24 flew to a mud flat on my approach and were still there, motionless, when I returned an hour later.

Phalacrocorax auritus, subsp. DOUBLE-CRESTED CORMORANT. A flock of five in the river on April 14, and another bird on the 17.

Pelecanus occidentalis. BROWN PELICAN. The pelicans, I was informed, occur regularly along the Smith's Island shore but rarely go much further north. I saw three flocks of nine, twenty-seven and four birds

respectively. I was talking to Captain Swann of the light house when I saw the twenty-seven. He remarked that he had never seen so large a flock before. The birds were all flying south, toward the cape. April 15.

Mergus serrator. RED-BREADED MERGANSER. Three birds, April 14, one definitely identified as serrator.

Anas rubripes. BLACK DUCK. Four.

Charitonetta albeola. BUFFLEHEAD. A female, probably a belated migrant, April 15th.

Oidema americana. AMERICAN SCOTER. Four, April 15.

Oidema perspicillata. SURF SCOTER. One, April 15.

Ajaia ajaja. ROSEATE SPOONBILL. One.

Ardea herodias herodias. GREAT BLUE HERON. Besides the 150 mentioned above, a few individuals were seen on Smith's Island and along the shore of the Cape Fear River.

Herodias egretta. EGRET. The twenty birds seen were in and about their nests and I assumed that the nests contained eggs or young though I was unable to verify my belief as my time was limited and the nests were difficult of access.

Egretta candidissima candidissima. SNOWY EGRET. Only five of these beautiful birds were seen. They were apparently not nesting yet. They may have been the vanguard of a larger flock.

Hydranassa tricolor ruficollis. LOUISIANA HERON. Many of these birds and those of the next species seen in Orton Lake on April 17, were carrying sticks, and some had completed nests. These were in small trees above the water, and a few of those near the row-boat were seen to contain four eggs. Lack of time prevented me from ascertaining to which species the eggs belonged as the birds kept their distance. The dates given by Chapman for the nesting of this species and the next for South Carolina are April 20, and 23, respectively.

Florida caerulea. LITTLE BLUE HERON. All the Little Blue Herons that I saw at Orton Lake were in the adult plumage, and all appeared to be nesting or building. Five of the nine seen at Smith's Island were in the white plumage.

Nycticorax nycticorax naevius. BLACK-CROWNED NIGHT HERON. A single bird in adult plumage flying over Orton Lake.

Pisobia minutilla. LEAST SANDPIPER. Three on the beach at Smith's Island, April 15.

Pelidna alpina sakhalina. RED-BACKED SANDPIPER. A flock of 20. A few showed traces of reddish in the back and of black on the belly. The rest were in winter plumage, April 15.

Calidris leucophaea. SANDERLING. Eight individuals, a few showing the beginnings of the summer plumage. April 15.

Catoptrophorus semipalmatus semipalmatus. WILLET. About 15 of these handsome but noisy birds were observed along the beach. April 15.

Actitis macularia. SPOTTED SANDPIPER. Three, April 15.

Numenius hudsonicus. HUDSONIAN CURLEW. Seven in all. April 15.

Squatarola squatarola. BLACK-BELLIED PLOVER. A single bird. April 15.

Aegialitis semipalmata. SEMIPALMATED PLOVER. One lone ring-neck was seen with large flocks of the next species.

Ochthodromus wilsonius. WILSON'S PLOVER. This was by far the commonest shorebird, and the chirping, unplover-like note was heard everywhere on the beaches. One hundred and fifty is a very modest estimate of the number seen. April 15.

Arenaria interpres morinella. RUDDY TURNSTONE. A flock of 18 showing various stages of plumage. April 15.

Haematopus palliatus. OYSTER CATCHER. These queer birds were quite common (50), and the small clumps of oysters on the mud flats showed evidence of their work. In most cases, the smaller mollusks on the outside of the clumps were the ones that were opened and the larger ones were left alone. The natives call them "Oyster Birds" which is a better name than Oyster Catcher, inasmuch as these "luscious bivalves" are not noted for agility. They, the birds, are said to be permanent residents. April 15.

Colinus virginianus virginianus. BOB-WHITE. Two coveys of about 12 each in Sunset Park near Wilmington.

Meleagris gallopavo silvestris. WILD TURKEY. According to all accounts these birds are still found in numbers in the unsettled regions back of the Cape Fear River. I was not able to locate any.]

Cathartes aura septentrionalis. TURKEY VULTURE. I found this bird much commoner than the Black Vulture. About 18 of the present species were noted as compared with 4 of the next.

Catharista urubu. BLACK VULTURE.

Haliaeetus leucocephalus leucocephalus. BALD EAGLE. There were 2 Eagles over the Cape Fear River on April 14 and 2, possibly the same, on April 17. These were the only Buteonidae observed.

Pandion haliaetus carolinensis. OSPREY. Two pairs of birds with nests at Smith's Island, and about 15 birds at Orton Lake. The nests of the latter were on the tops of the tall stumps of cypress trees that rose here and there from the waters of the lake.

Ceryle alcyon alcyon. BELTED KINGFISHER. Two at Smith's Island.

Dryobates pubescens subsp. SOUTHERN (?) DOWNY WOODPECKER. One.

Dryobates borealis. RED COCKADED WOODPECKER. Commoner than the preceding, but the relative absence of woodpeckers was noticeable. I observed a total of 10 birds of four species during the week altho the region is generally wooded.

Centurus carolinus. RED-BELLIED WOODPECKER. Three together near Orton.

Colaptes auratus, subsp.? **FLICKER.** Only one bird seen.

Antrostomus carolinensis. **CHUCK-WILL'S-WIDOW.** A note heard repeatedly in the night of April 17-18 was undoubtedly that of this species. I did not see the bird nor had I heard the note before.

Antrostomus vociferus vociferus. **WHIP-POOR-WILL.** I flushed a whip-poor-will on April 17 at Southport.

Chaetura pelagica. **CHIMNEY SWIFT.** Two at Southport, April 17.

Archilochus colubris. **RUBY-THROATED HUMMINGBIRD.** One at Wilmington, April 14.

Tyrannus tyrannus. **KINGBIRD.** Ten at Southport, April 17. Eight at Orton, April 18.

Myiarchus crinitus. **CRESTED FLYCATCHER.** About as common as the preceding. This was one of the few passerine birds seen at Smith's Island. I was told, however, that the woods were frequently "full of small birds."

Cyanocitta cristata cristata. **BLUE JAY.** Seen only at Southport. (About 15.)

Corvus brachyrhynchos brachyrhynchos. **CROW.** This species was less common than the next, the ratio being about 1 to 4. Sixty-five crows of the two species were noted.

Corvus ossifragus. **FISH CROW.**

Agelaius phoeniceus phoeniceus. **RED-WINGED BLACKBIRD.** One seen at Smith's Island.

Sturnella magna, subsp.? **MEADOWLARK.** A flock of 10 near Orton.

Icterus spurius. **ORCHARD ORIOLE.** Three at Southport, April 17.

Megaquisculus major major. **BOAT-TAILED GRACKLE.** About 12 in the salt marshes at Smith's Island. The notes appeared to me more pleasing, or rather less discordant, than those of the Purple Grackle.

Passer domesticus domesticus. **HOUSE SPARROW.** In the towns.

Passerculus sandwichensis savanna. **SAVANNAH SPARROW.** One, on Smith's Island.

Passerherbulus henslowi henslowi. **HENSLOW'S SPARROW.** One, at Southport.

Zonotrichia albicollis. **WHITE-THROATED SPARROW.** About 50 in all.

Spizella passerina passerina. **CHIPPING SPARROW.** Saw only 2 at Wilmington.

Spizella pusilla pusilla. **FIELD SPARROW.** Only 4 seen. In fact, the absence of Fringillidae as compared with the number present at this season about New York was apparent. The notes were louder, less whistled, more bell-like than those about New York.

Pipilo erythrophthalmus erythrophthalmus. **TOWHEE.** A few.

Cardinalis cardinalis cardinalis. **CARDINAL.** Twelve.

Passerina cyanea. **INDIGO BUNTING.** A male in transitional plumage with a flock of migrating warblers, April 14.

Piranga erythromelas. SCARLET TANAGER. Wilmington, April 14. One.

Piranga rubra rubra. SUMMER TANAGER. Three in song, April 17. Southport. Three at Orton, April 18.

Progne subis subis. PURPLE MARTIN. A colony in Southport.

Hirundo erythrogastra. BARN SWALLOW. Six.

Iridoprocne bicolor. TREE SWALLOW. Three.

Stelgidopteryx serripennis. ROUGH-WINGED SWALLOW. Two.

Vireosylva olivacea. RED-EYED VIREO. Not as common as the White-eyed.

Lanivireo solitarius solitarius. BLUE-HEADED VIREO. Two.

Vireo griseus griseus. WHITE-EYED VIREO. Generally distributed throughout this section. About 20 noted.

Protonotaria citrea. PROTHONOTARY WARBLER. I had barely recovered from the thrill of my first Egret when I saw one of these gems on the swollen base of a cypress tree, not 10 feet from the boat. I still think that it was the most beautiful bird I have ever seen. Six in all were noted, in swampy sections.

Compsothlypis americana americana. PARULA WARBLER. These birds and probably also *C. a. usneae* were common wherever there was "Spanish Moss." I saw about 50.

Dendroica aestiva aestiva. YELLOW WARBLER. Wilmington, April 14. One.

Dendroica coronata. MYRTLE WARBLER. Ten, Wilmington, April 14; two, Southport, April 17; eight, Orton, April 18; ten, Wilmington, April 19.

Dendroica dominica dominica. YELLOW-THROATED WARBLER. These were somewhat commoner than the Prothonotary Warblers and more generally distributed.

Dendroica virens. BLACK-THROATED GREEN WARBLER. Song heard at Orton Lake.

Dendroica vigorsii. PINE WARBLER. Fairly common in the long-leaf pine. Twenty-eight.

Dendroica discolor. PRAIRIE WARBLER. Occurred with the preceding but not so common.

Geothlypis trichas, subsp.? YELLOW-THROAT. One at Wilmington, April 19.

Mimus polyglottos polyglottos. MOCKING BIRD. Not nearly as common as I had anticipated. I saw not more than 25 individuals.

Dumetella carolinensis. CATBIRD. Two.

Toxostoma rufum. BROWN THRASHER. Two.

Thryothorus ludovicianus ludovicianus. CAROLINA WREN. Eight.

Troglodytes aedon aedon. HOUSE WREN. One, April 18.

Sitta canadensis. RED-BREASTED NUTHATCH. One bird at Wilmington, April 14, an unexpected find.

Sitta pusilla. BROWN-HEADED NUTHATCH. In company with the preceding and with Red-cockaded Woodpeckers. Five.

Baeolophus bicolor. TUFTED TITMOUSE. Fifteen.

Penthestes carolinensis carolinensis. CAROLINA CHICKADEE. Twenty.

Regulus calendula calendula. RUBY-CROWNED KINGLET. A singing male at Orton, April 18.

Poliophtila caerulea caerulea. BLUE-GRAY GNATCATCHER. Five.

Hylocichla mustelina. WOOD THRUSH. Song heard at Wilmington, April 19.

Sialia sialis sialis. BLUEBIRD. Three.

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MIGRATION AND PHYSICAL PROPORTIONS. A PRELIMINARY STUDY.

BY C. K. AVERILL

It is a matter of common observation that birds most capable of long sustained flights are long winged. Such are the swallows and swifts on land and the terns, plovers and sandpipers along the shore.

A bird flying 35 miles per hour passes through the air at the rate of 51 feet per second and the form of the tail evidently has much to do with the resistance offered by the air. It is evident that the stream lines that pass under the body of the bird will converge at the rear of the body, striking against the tail and causing undue pressure. In birds of superior power of flight—terns, swallows, swifts, gulls, kites, the tail is either forked or it is short, in either case there is little tail beyond the end of the under tail coverts in the median line.* It is the mechanical function of the under tail coverts to fill in the angular space where the tail joins the body where without the coverts an area of reduced pressure would be formed increasing the resistance. The tail of the barn swallow,

*In the soaring hawk or eagle the large broad tail forms one of the three planes which support the body.

deeply forficate, is part of Nature's ornamental scheme and such tails occur in terns, kites, swallows, where elegance of form and beauty and great ease of flight are combined. We shall find that among similar birds the species with the longer wings has a shorter or more emarginate or forked tail.

These two points, long wing, and tail of small area we may observe in the flying bird, but if we hold our bird in the hand, be it swallow or swift, we also notice that it has small feet and legs. Apparently Nature takes pains in reducing all superfluous weight and carefully considers all trifles. Among the economies the elimination of the hind toe appears to be included. Thus in the true snipe represented by the woodcock, Wilson's Snipe and Dowitcher the hind toe is present. In the sandpipers which are much longer winged it is much smaller and in the Sanderling which seems the lightest and best formed of these birds and which makes an annual flight of 2000 miles across the ocean to the Sandwich Islands, the hind toe vanishes entirely. Again in the plover family it is present in the Lapwing and Surf-bird, rudimentary in the Black-bellied Plover and is obliterated in the Golden Plover, whose migratory flights so astonish us.

In the petrels, those long winged birds of the sea, the hind toe is minute or lacking entirely. Can these instances be regarded as fortuitous?

Along the same line we notice that the bill of our swallow or swift is extremely small although we cannot see that a larger bill would interfere with the capture of the insects which these birds feed upon. What we see is the cutting out of all surplus material.

In the terns the feet are reduced in size very much as compared with the gulls. The bill, however, cannot be reduced and be effective in catching fish. Reduction is possible only when not interfering with the life of the bird.

We have then four points of a good flier,—long wing, short tail, or tail of small area, small bill and small legs as shown by length of tarsus. It is one object of this paper to show that the better equipped birds in these respects, in any group, have a greater migratory range.

We will tabulate the genus *Helminthophila* from Ridgway's 'Birds of North and Middle America,' using measurements of

the male bird always. The first column contains the name of the bird, the second a brief statement of its range, the third the wing length, the fourth the tail length, the fifth column the difference between wing and tail lengths. It is this column that shows at a glance that the bird making the long migration, is also best proportioned for flight. Measurements in millimeters.

HELMINTHOPHILA.

Species	Range	Wing	Tail	Diff.	Cul.	Tars.
Tennessee Warb.	E. N. A. N. E. New York to to Alaska. In winter to Venezuela	64.5	42.5	22.1	9.6	16.8
Bachman's	So. States to Cent. Am.	58.9	44.2	14.7	11.4	17.3
Blue-winged	S. N. Eng. to Guatemala	60.2	46.0	14.2	10.7	17.3
Golden-winged	Mass. to Colombia	62.2	46.2	16.0	10.7	17.5
Nashville	Saskatchewan to Colombia	59.2	43.9	15.3	9.5	17.0
Calaveras	Brit. Col. to Mexico.	60.2	45.5	14.7	9.6	16.8
Virginia's	Mt. Dist. Color. to Mexico	61.2	46.0	15.2	9.4	17.0
Lucy's	Arizona and Mexico	52.1	38.6	13.5	8.4	15.5
Orange crowned	Alaska to Mexico	62.2	50.0	12.2	9.6	17.8
Lutescent	Pacific Coast—Alaska to Guatemala	59.9	47.0	12.9	9.4	18.0
Dusky	Calif. Santa Barbara Is. and adjoining mainland.	59.2	49.8	9.4	11.4	18.3

Here we see by the figure opposite the Tennessee Warbler, 22.1, that it is the bird making the longest migration. At the end of the list is the Dusky Warbler, 9.4, showing the longest tail of all and the shortest wing relatively. We notice that it carries a larger bill and tarsus than the Tennessee in accordance with what we have already said.

In the same way we may compare the Orange-crowned, Lutescent and Dusky, three races of the same species and note the better flying characteristics of the two birds that reach Alaska.

Let us in the same way make a table of the genera *Oporornis* and *Geothlypis*.

These six birds are arranged in order of their relative wing and tail lengths. With the exception of the Kentucky they also come in order of the extent of their migratory range. While the tail and wing vary greatly the bill and feet remain very much alike

in size. It is evident from this table and the preceding that the important features are wing and tail. The increase in wing length is mostly in the primaries so that the long wing is a pointed wing as in the Connecticut and Kentucky, and the short wing is a round wing as in the Yellow-throat. With the round wing goes the round tail while the long wing accompanies the even tail.

OPORORNIS AND GEOTHLYPIS.

		Wing	Tail	Diff.	Cul.	Tar.
Connecticut Warb.	E. N. A. North Mich. to Brazil	73.1	49.8	23.3	11.9	21.3
Kentucky	E. U. S. Hudson Valley to Colombia	70.1	51.0	19.1	11.9	22.3
Mourning	E. N. A. Canadian Zone, winters from Nicaragua to Ecuador	61.5	49.0	12.5	11.4	20.8
Macgillivray's	W. U. S. Breeds from Brit. Col. So. to New Mex. In winter from Lower Calif. to Colombia.	62.2	55.6	6.6	11.4	21.6
Northern Yellow-throat.	So. Canad. to Costa Rica.	55.1	49.2	5.9	11.4	20.5
Florida Yellow-throat.	Gulf States. Winters in W. I.	55.2	53.0	2.2	11.5	20.7

YELLOW-THROATS.

		Wing	Tail	Diff.	Cul.	Tars.
Maryland	Atlantic Coast districts of U. S. Winters in W. I.	52.9	49.3	3.6	10.5	20.1
Northern	N. E. U. S. and S. E. Brit. Provinces. In winter to Guatemala.	55.1	49.2	5.9	11.4	20.5
Florida	Gulf States. Winters in W. I.	55.2	53.0	2.2	11.5	20.7
Western	Arid regions of U. S. In winter to Mexico.	57.5	55.8	1.7	11.3	20.9
Pacific	Pacific Coast—Brit. Col. to Calif. Winters in Cape St. Lucas.	55.8	52.6	3.2	10.3	20.4
San Blas	Mexico only.	55.3	51.1	4.2	11.4	20.8
Salt Marsh	California	52.6	48.3	4.3	10.2	19.9
Japala	Mexico	61.2	60.2	1.0	11.2	21.0

Of these eight geographical races the longest migration is made by the Northern Yellow-throat which has the shortest tail in relation to wing. It is important to notice that the southern, western and Mexican birds are all longer tailed with the exception of the salt marsh race. We often read in the text books that western races have longer tails, but it is seen in this table as well as in the others that it is the bird of limited range that has this characteristic, rather than the bird of any particular region.

It will be of interest to tabulate the whole genus *Dendroica* on account of the number of species and because we have great differences in length of annual journeys—from thousands of miles each year to zero.

DENDROICA I. BREEDING IN HUDSONIAN AND CANADIAN ZONES. IN WINTER IN SOUTH AMERICA.

	W.	T.	Diff.	Culm.	Tars.
Blackpoll Warbler	74.2	51.3	22.9	10	19.1
Bay-breasted	73.4	53.1	20.3	10.4	18.3
Blackburnian	67.8	48.3	19.5	9.9	17.5
Yellow	62.5	44.4	18.1	10.1	18.6
Average	69.5	49.3	20.2	10.1	18.4

DENDROICA II. BREEDING IN SOUTHERN STATES. WINTER IN S. A.

	W.	T.	Diff.	Culm.	Tars.
Cerulean	65.5	45.0	20.5	9.9	16.5

DENDROICA III. ALASKA TO LABRADOR. NOT BREEDING S. OF CANADIAN ZONE. WINTERING U. S. TO PANAMA.

Myrtle	74.1	56.2	17.9	10.	19.6
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DENDROICA IV. BREEDING IN CANADIAN ZONE. NOT REACHING SOUTH AMERICA IN WINTER.

Cape May	66.3	47.2	19.1	9.8	17.8
Yellow Palm	67.1	54.6	12.5	9.9	20.0
Black-throated Blue	65.2	51.1	14.1	9.4	18.7
Black-throated Green	63.8	47.8	16.0	10.2	17.3
Magnolia	60.1	48.7	11.4	9.0	17.8
Average	64.5	49.9	14.6	9.8	18.3

DENDROICA V. BREEDING S. OF CANADIAN ZONE. NOT REACHING
S. AMERICA IN WINTER.

Prairie	57.6	47.8	9.8	9.4	18.3
Kirtland's	71.4	58.8	12.6	11.9	22.3
Pine	72.9	54.4	18.5	10.9	18.5
Yellow-throated	66.9	50.7	16.2	13.8	17.4
Chestnut-sided	63.3	50.1	13.2	9.6	17.8
Average	66.4	52.3	14.1	11.1	17.9

DENDROICA VI. WEST INDIAN SPECIES. NOT MIGRANTS.

	W.	T.	Diff.	Cul.	Tar.
Jamaica Yellow	65.0	50.3	14.7	10.6	20.5
Guadaloupe	58.4	45.5	12.9	10.4	19.1
Panama	66.0	49.5	16.5	11.0	20.
Adelaide's	50.	42.3	7.7	10.0	18.6
Santa Lucia	56.	51.	5.0	10.1	18.2
Cuban	58.9	49.4	9.5	10.3	16.4
Vittelline	56.8	51.0	5.8	11.0	19.8
Plumbeous	61.9	54.1	7.8	11.0	20.3
Streaked	62.8	51.1	11.7	11.3	18.8
Average	59.5	49.4	10.2	10.6	19.1

Taking the genus *Dendroica* the difference is almost entirely in wing length, the tail does not differ as it does when comparing geographical races, nor do the bill and tarsus differ much.

In this genus as in the others preceding we can certainly "pick the winner" by relative length of wing and tail. The Blackpoll is one of the most famous of all passerine birds as a migrant. Quoting from Cooke "the shortest journey any blackpoll performs is 3500 miles while those that nest in Alaska have 7000 miles to travel to their probable winter home in Brazil" and we find it showing the maximum difference between length of wing and tail 22.9. The Bay-breasted, Blackburnian and Yellow Warbler all of which reach South America in their flight show a difference of 20.3, 19.5 and 18.1 respectively.

We note that the Cerulean Warbler although it does not go far north is well proportioned for flight (difference 20.5) and it will be found that the shorter winged species neither go far north nor to South America.

I have tabulated measurements for birds of other families and the same principle seems to hold good in nearly every case, though

of course in birds such as swallows and swifts and others especially adapted for continuous flight the points I have called attention to are not noticeable. It would be useless to multiply examples as the other tables simply emphasize what I have shown in the Warblers.

SUMMARY.

We have seen that the longest migrations in any group of similar birds are made by those with longer wings, smaller tails, and smaller bills and feet, and from observation of birds of highly developed powers of flight we conclude that flight is easier for birds so proportioned.

We know that migratory flights are a tax on the strength and endurance of birds, that they cross considerable bodies of water that in order to arrive in spring with the punctuality which many of them attain, they fly under unfavorable conditions, against adverse winds, in stormy weather, and are often found exhausted by the struggle. Perhaps if we recall some of the cases of warblers in distress we have witnessed or read of we remember that such long winged species, as Blackpolls, Myrtles, Yellows, Oven birds, Water-Thrushes, fared better than the shorter winged Yellow throats, Parulas, Redstarts. It is logical to conclude that by natural selection nature develops the characteristics of good flight and the fittest survive.

If birds extended their range by sudden expeditions to some distant point then we might suppose the long winged birds had simply beaten the short winged. Perhaps to some extent this has happened. We may suppose that the Starling with its excellent wing and tail for flight will extend its range more rapidly than some bird of poor flight power. But when we look at the table of Yellow Warblers or of Parula Warblers the differences in physical proportions are so slight that it seems they could not be, as they are, important factors in acquiring range. They seem rather to be incipient developments that will increase with time.

The forked tail accompanies the longer wing in our North American migrants and is an evidence of good power of flight.

The birds of the west, those of and beyond the Rocky Mountains, while they may go far north to breed, many of them to

Alaska, do not go far south in winter since the climate of our southwestern states and that of Mexico is such that food cannot be procured at that season. Their migratory flights are so much shorter than those of our eastern birds that they have generally poorer proportions for flight these conditions being particularly noticeable in the birds of the southwestern states, where so many are resident. This region then is the metropolis for long-tailed, short-winged, large-billed and large-legged birds. The Florida races are of the same sort but much fewer in numbers.

Life for the bird is mainly a struggle for food, and this implies a struggle for room, for extension of feeding grounds and breeding places. In this struggle those with good flight abilities and vigor are found to have the widest distribution for it is written in the book of birds that the longed-winged shall inherit the earth.

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GENERAL NOTES

Roseate Tern (*Sterna dougalli*) Breeding in Virginia.—While spending six weeks during the spring of 1920 along the coast of Virginia, I visited every island from Cobb's to Cape Charles, and was surprised and gratified to find the Roseate Tern breeding on three of these islands, namely, Cobb's, Wreck and Isaac's. They were in small groups of three or four pairs in company with Common Terns. I found them to be much more pugnacious than the Common Tern, and while darting at an intruder, would come so close that there was no doubt as to their identity. As Bailey, in his 'Birds of Virginia' does not mention this as a breeding bird of the State, I deem this fact worthy of record.—B. R. BALES, M.D., Circleville, Ohio.

Egret at South Orleans, Mass.—Mr. E. B. Mecarta, of Harwich, has given me the following facts in regard to the capture of an American Egret (*Herodias egretta*) at South Orleans, Mass. On July 26, 1920, Mr. John Kendrick saw a large white heron in a small pond near the state road, and on July 29 the bird was again noticed in the same pond flapping violently as if injured. Upon investigation the heron proved to have had one foot nearly severed probably by a snapping turtle, and was captured from a boat. Mr. Mecarta amputated the foot, and delivered the bird alive to the Curator of the Franklin Park Museum, where it was left in apparently good health on August 2. Strong southwest winds which had

prevailed for ten days may have carried the bird north. About the same time four "Portuguese Man-o-War" were picked up on South Beaches near Chatham.—R. HEBER HOWE, JR., Chatham, Mass.

The Louisiana Heron (*Hydranassa tricolor ruficollis*) at Cape May, N. J.—On August 1, 1920, about a mile west of Cape May, N. J., I flushed a small flock of herons containing five individuals of the Little Blue Heron (*Florida caerulea*) and one of the present species. The birds settled in a shallow pond and were flushed again at closer range. On both occasions the coloration of this bird could be distinctly seen both with the naked eye and with the binoculars, and as I am familiar with the species in the South I recognized it at once. Messrs. J. Fletcher Street and Samuel Scoville, Jr., of the Delaware Valley Ornithological Club, were with me at the time and also satisfactorily identified the bird.

During the rest of the month the Little Blue Herons were seen almost daily as well as individuals of the White Egret (*Herodias egretta*), twenty of the former and eleven of the latter being present, but on no occasion did the Louisiana Heron again appear. New Jersey has always been included in the range of this heron on the basis of the statements of Audubon and Turnbull, that it occasionally migrated that far north, but so far as I know there is no specimen extant from the State nor any definite record of its occurrence. The above record therefore is of considerable interest and is perhaps a further illustration of the benefits to be expected from the protection that is being afforded these birds on their breeding grounds on the Gulf coast.

The present summer seems to have been a good one for "White Herons," as my friend, John Treadwell Nichols, informs me that both the Little Blue and the Egret reached Long Island during August.—WITMER STONE, Academy Natural Sciences, Philadelphia.

The Marbled Godwit (*Limosa fedoa*) on the New Jersey Coast.—On August 9, 1920, about a mile west of Cape May, N. J., a Marbled Godwit flew past me at close range, coming from one of the small ponds on the salt meadows and making for the beach. It was disturbed however by some people walking there and did not alight, keeping on down the coast just inside the surf. About half an hour later it returned and settled on the edge of a shallow pond directly before me where I had an excellent opportunity of studying its markings. As I can find no recent records of its capture or occurrence on the New Jersey coast this observation seems worthy of record. Old gunners of twenty-five or thirty years ago speak of shooting Godwits, but it is not always clear which of the two species they had obtained. We have two specimens of the Marbled Godwit in the collection of the Academy of Natural Sciences of Philadelphia shot at Wildwood, N. J., by Dr. W. L. Abbott, September 14, 1880, but several more recent Godwit records are all the Hudsonian.—WITMER STONE, Academy of Natural Sciences, Philadelphia.

Marbled Godwit on Long Island, N. Y.—On August 14, 1920, we had snipe-decoys set in a pool on the mainland marsh bordering Moriches Bay at Mastic, Long Island. It was about mid-morning, and hot, with a brisk southwest wind. A Marbled Godwit (*Limosa fedoa*) came in from the north, alighted with our decoys, where it spent about ten minutes, chiefly preening itself, a stone's toss in front of us, then took wing and went on to the south.

Its long bill was rose-pink for about the basal half, the rest seeming black; its legs were lead-gray in color. Coming in it called a single peculiar squawk or honk; alighted, and especially when other shore-birds flew by, it had an unloud, very goose-like honk.

In view of the rarity of this bird on Long Island, and the interest as to whether some of the extirpated species are again becoming less rare, the occurrence seems worth recording.—J. T. NICHOLS AND CHARLES H. ROGERS, *New York City*.

The Willet (*Catoptrophorus semipalmatus semipalmatus*) in Nova Scotia.—Dr. Spencer Trotter recorded ('Some Nova Scotia Birds,' 'The Auk,' Vol. XXI, No. 1, pp. 55-64, Jan., 1904) that not long before, presumably in the summer of 1903, he had found Willets conspicuous about the salt marshes near Barrington, Shelburne County, Nova Scotia, and that, although he had found no nests of the species, his son had there shot a fully fledged young Willet on the wing early in July.

In 1910 the 3rd edition of the A. O. U. 'Check-List' said of the Willet: "Breeds from Virginia (formerly Nova Scotia) south to Florida and the Bahamas." On what evidence it was then supposed that the Willet had ceased to breed in Nova Scotia between 1903 and 1910 I do not know.

E. Chesley Allen, in 'Annotated List of Birds of Yarmouth and Vicinity, Southwestern Nova Scotia' (Trans. N. S. Inst. of Sci., Vol. XIV, Part 1, pp. 67-95, Jan. 5, 1916) states of the Willet: "Summer resident, but more common during the fall migrations. They show all evidence of breeding in our locality, though I have not yet found nest or young. First appearance (5 years) May 4."

Finally, in a list of Migratory Birds Convention Act prosecutions, published in 'The Canadian Field-Naturalist,' Vol. XXXIV, No. 2, p. 36, Feb., 1920, it is stated that two residents of Central Argyle (Yarmouth County), Nova Scotia, had been convicted of shooting Willets.

My own experience with Nova Scotian Willets is practically confined to the lower valley of the Chebogue River, in Yarmouth County, where, on the extensive salt marshes and the neighboring upland fields and swamps, Willets are not uncommon, as I have known since 1911, if not earlier. The only Willet which I have seen elsewhere was one observed from a train window, June 25, 1913, when it was flying over the salt marshes at Pubnico Harbor, Yarmouth County, Nova Scotia.

I have occasionally searched for the nests or the young of the Willets, but without success until June 8, 1920, when I found a nest with four eggs

of this species, in an open swale in an upland pasture, about a quarter of a mile from the nearest salt marsh or salt water, at Arcadia, Yarmouth County, Nova Scotia, on the western side of the Chebogue River. The nest was near the junction of the River Road with Argyle Street, and was about 150 yards from each of those much-travelled highways, which were in full view from the nest-site. Several cattle occupied the pasture at the time when the nest was found. The swale in which the nest was placed was of considerable extent and was of the kind preferred as a breeding-place by Wilson's Snipe; in fact, a pair of those birds were evidently nesting there. The Willet's nest was a slight hollow in the damp ground, lined with a few dead rushes. It was surrounded by growing rushes, cinnamon fern, low blackberry bushes, and wild rose bushes, and was well concealed. The eggs agreed with standard descriptions of Willets' eggs. They and the nest were left undisturbed.

The sitting Willet flushed from the nest at my very feet, and in appearance and cries was of course unmistakable. So fast did it tear through the low growth around the nest that it left me, as further proof of its identity, two of its feathers, one of which is being forwarded to the Editor of 'The Auk' with this note.

On June 14, 1920, I found another Willet's nest, containing four eggs, at Cook's Beach, at the mouth of the Chebogue River. This nest was scantily lined with dry grass and "eel-grass" and was in a slight hollow on top of a dry, grassy knoll, about fifteen feet above high-tide mark, which was about fifty feet distant. The sitting bird was surrounded by short growing grass and strawberry plants, and by two or three small plants of Iris. It flushed from the nest at my feet, and by loud cries attracted its mate and its neighbors, so that I soon had the pleasure of seeing six Willets in the air together near me. I estimate that there were about a dozen pairs of Willets breeding along the Chebogue River in 1920, and the species is apparently to be considered not uncommon in suitable areas in southwestern Nova Scotia.

When scolding an intruder, Nova Scotian Willets seem to prefer to perch on the very top of some spruce or fir tree, where they appear strangely out of place. They also perch readily on buildings, telephone poles, and fences. For such large game birds they are not very shy, and I have seen one perch on top of a telephone pole close beside the road until I, riding along the road on a bicycle, was directly opposite it, when it flew.

Canada is making special efforts, under the provisions of the Migratory Birds Convention, to give the Nova Scotian Willets such effectual protection as shall result in their rapid increase in numbers.—HARRISON F. LEWIS, Quebec, P. Q.

The Willet in Nova Scotia.—In the last edition of the 'Check-List' of the American Ornithologists' Union, under the head of Willet (*Catoptrophorus semipalmatus semipalmatus*), it is stated that "Breeds from Virginia (formerly Nova Scotia) south to Florida and the Bahamas." I am glad to be able to state that this bird still breeds in Nova Scotia.

On July 6, 1920, I saw a Willet flying over the salt marshes at Pubinco, two more on the same day at Wood's Harbor—these records were made from the railway train—and on July 9, one at Barrington Passage, all in southern Nova Scotia. On July 18, on the sand flats of Barrington Bay, near Coffinscroft, I found a flock of ten Willets, and on July 25, at the same place, Dr. Spencer Trotter and I counted twenty-six of these birds.

Dr. S. K. Palten, of Boston, formerly of Yarmouth, tells me that Willets were shot in considerable numbers in the marshes at Comeau Hill, about twelve miles southeast of Yarmouth, every year. He heard of twenty-two being shot there in 1917. In 1919 some were shot and the offender prosecuted and fined at Yarmouth under the Migratory Bird Convention Law.

Mr. Harrison F. Lewis, as will be seen by his note in this number, has given the final proof of the Willets' still breeding in Nova Scotia by the discovery of two nests with eggs.—CHARLES W. TOWNSEND, M.D., 98 Pinckney St., Boston, Mass.

Breeding of the Semipalmated Plover (*Aegialitis semipalmata*) in Yarmouth County, Nova Scotia.—On June 14, 1920, at Cook's Beach, at the mouth of the Chebogue River, Yarmouth County, Nova Scotia, I found a nest and four eggs of the Semipalmated Plover (*Aegialitis semipalmata* (Bonap.)). The nest was a short distance above ordinary high-tide mark, at a point where the beach consisted of smooth gray stones of moderate size, among which had lodged enough soil to support a very scanty growth of fine, short grass. The four eggs, which corresponded in appearance with the description of the eggs of this species contained in Chapman's "Handbook of Birds of Eastern North America," 1912 edition, lay, points inward, on a few bits of seaweed, in a slight, circular depression, apparently made by the bird. They were wholly without shelter, yet so well did they blend in appearance with their surroundings that I had previously searched the beach carefully for three hours without finding them. I finally discovered them by seeing the parent Plover run to them and incubate them while I sat motionless beside some lobster-traps which were piled on the beach a few rods away. After incubating for about ten minutes, the Plover became uneasy, left the eggs, and, with short runs and frequent pauses, repeatedly approached within eight feet of me on the open beach, giving me the best of opportunities to see in detail the characteristic markings of the species. I have been familiar for many years with the appearance and notes of both the Semipalmated Plover and the Piping Plover, and, under the circumstances, could make no error in this identification. There were at least five pairs of Semipalmated Plovers at Cook's Beach on the day of my visit, all apparently breeding there, but I found one nest only belonging to that species. The nest and eggs were left untouched.

The 1910 edition of the A. O. U. 'Check-List' says that this Plover "breeds from Melville Island, Wellington Channel, and Cumberland

Sound to the valley of the Upper Yukon, southern Mackenzie, southern Keewatin, and Gulf of St. Lawrence." The Gulf of St. Lawrence does not extend south of latitude $45^{\circ} 35'$ N., while Cook's Beach is in latitude $43^{\circ} 44'$ N., so that it is evident that the breeding-range of this bird extends farther south than was supposed.—HARRISON F. LEWIS, *Quebec, P. Q.*

The Cowbird's Whistle.—During a visit of five days at Jamestown, R. I., July 3–7, 1915, I frequently heard a male Cowbird (*Molothrus ater ater*) whistle in the following manner. He gave two long whistles, inflected upward, followed by three short, quick whistles on a lower pitch. His only variation was to omit one of the long whistles. This bird interested me not a little, for in Lexington, Mass., where the Cowbird is common—especially in the spring and early summer—I have noted a remarkable uniformity in its note. The Lexington birds give one long whistle followed by two short ones—never more and never less.

I should not have ventured to call attention to this Jamestown bird, if the matter had not been brought to my memory by another Cowbird (presumably another one) at exactly the same spot in Jamestown. On May 2, 1919, as I was passing the corner of the road where I had heard the bird four years before, a Cowbird uttered a long whistle, then two short ones, and concluded the series with another long whistle. This performance was not exactly the same, to be sure, as that heard in 1915, yet it was similar to it, and, at the same time, very different from our Lexington birds. During the spring of 1919 I noticed repeatedly a similar extension in the whistling of another Cowbird, two or three miles away in Saundertown, R. I., although other Cowbirds near at hand whistled as the Lexington birds do.

A small matter, all this, perhaps, yet in the light of Mr. Saunders' illuminating demonstration in his article on Geographical Variation in Song ('The Auk,' 1919, pp. 525–528) the thought suggests itself that there may be many minor variations in bird-songs, slight in direct proportion to the distance separating varying birds. Possibly these Rhode Island Cowbirds presented a variation of a longer song of which I am ignorant, but which may be heard in the southern states.—WINSOR M. TYLER, M.D., *Lexington, Mass.*

Dance of Purple Finch.—The following description of the ecstatic movements of a Purple Finch (*Carpodacus purpureus purpureus*) is interesting in the light of recent discussion. At six-fifteen (Eastern Time) on the afternoon of May 16, 1920, my wife called my attention to a male Purple Finch fluttering among the branches of our cherry tree. A female Purple Finch was soon discovered sitting quietly in the same tree. The male remained about five feet from the female, taking short, nervous flights, raising his crest and softly uttering the call note. In a few moments the female flew down to the ground. At once the male followed and became violently excited, drawing his quivering wings out in an arc

until the ends of the primaries swept the ground. For about four or five minutes this prancing dance was continued while he drew nearer the passive female. And now when he was about two inches from and in front of her he picked up a straw, dropped it and picked up a piece of grass which hung from each side of his bill. This seemed to be the signal for the greatest agitation on his part; with ecstatic dance, full song and vibrating wings he moved slowly on beating feet, back and forth before the female; then he rose six inches in the air, poured forth glorious song notes and dropped to the ground at one side of the female. He landed on his feet but instantly took a most dramatic pose by holding stiffly his spread tail to the ground and tilting back on that support with head held high, the raised crest and carmine ruff adding to the effect. Then like a little tragedian he rolled over on his side, apparently lifeless; the song ceased and the straw fell from his bill. Up to this time the female had remained oblivious as far as outward manifestation showed, but now she turned quickly and gave the male as he lay "dead" a vicious peck in the breast, whereat he came to and flew up in the tree, a normal bird once more, and was soon singing in the usual deliberate fashion from a high perch. The female busied herself about the spot where he had just danced and soon finding the straw and grass which he had dropped she picked them up in her bill and flew into the tree where she went searching from place to place for a spot to start a nest.

I have had one other similar experience with a Purple Finch which included the dance and the straw, but without this dramatic ending. The birds which I have described above were already mated. What relation does this dance of the straw bear to the starting of the nest? At first glance it appears to the reason of man to be an elaborate attempt to stimulate the female to start building the nest.—GORDON BOIT WELLMAN, 48 Dover Road, Wellesley, Mass.

Breeding of the Evening Grosbeak in Manitoba.—During the week-end of May 29–June 1, while collecting at Gimli, Lake Winnipeg, I secured several specimens of the Evening Grosbeak. Besides the fact that this was a very late date for the birds in this part of the Province, I was interested to note that they all appeared to be paired, with the one exception of a male which was apparently courting a female Rose-breasted Grosbeak. They were present during the whole of the week-end and from their behaviour I judged that they were mating and preparing to nest. Knowing that I should be unable to visit the locality again before August, I mentioned the facts to my friends, Messrs. A. G. Lawrence and Harrold, of this city, asking them if they could run up in the meantime and keep their eyes open for the birds. Mr. Harrold managed to visit Gimli on July 1 and found the birds there as expected. He tells me they were fairly plentiful, but he found no nests as his time was very limited. Early in August I was myself back in Gimli, again found the Evening Grosbeak plentiful, and on August 9 collected a juvenile bird. There is therefore no doubt that they bred here.

Mr. Lawrence visited Pine Lake on the borders of Manitoba and Ontario (actually in Ontario) on July 3. He found the Evening Grosbeak in some numbers but found no nest.

Since returning to Winnipeg, Mr. Lawrence tells me that one of the orchardists at the Agricultural College told him that he had actually found the nest of an Evening Grosbeak near the college grounds. Mr. Lawrence promptly went out to see it, but the man was unable to locate it again and supposed that it had been destroyed.

My own time, from the middle of June to the beginning of August, was spent at the Manitoba University Biological Station at Indian Bay, Shoal Lake, Lake of the Woods. Indian Bay is in Manitoba, a few miles from the Ontario boundary. I saw no signs of Evening Grosbeaks till July 23, when I heard the note on one of the islands in the bay. To my surprise I found an old bird accompanied by a single young one clamouring for food. To my great regret I failed to secure either of them, as they were almost at once lost to view in the growth and were not seen again till leaving the island and out of range. On the 26th, however, on the mainland and not far from the Biological Station, I again heard the note and this time found a family of three or four being fed by the parents. I shot two of the young, but one was lost in the dense growth. Later in the day I came across yet another family of young and collected one of these. There can be no doubt that these birds were bred in the immediate vicinity as the youngest of the two I secured could not have been long out of the nest. They may have been reared on one of the islands, though the forest is so dense that they more probably had their homes on the mainland and escaped observation earlier.—WM. ROWAN, *Department of Biology, Alberta University, Edmonton, Alta., Canada.*

A Change in the Nesting Habits of the Common House Sparrow (*Passer domesticus*).—After its introduction into the National Capital, the House Sparrow bred the following spring and summer in many places. Hundreds of them made their nests in the vines on churches and elsewhere; while it was no uncommon thing to observe from three to half a dozen of their big, bulky nests in one of the street maples or other trees. They were all the more conspicuous for the reason that the birds bred so early that their nests were in evidence long before the selected trees had fully leafed out.

Then, in a year or so, followed the "sparrow-war"—a persecution to the death of these birds, carried on in the most merciless manner. Their nests were pulled out of trees and other places more rapidly than they could build them; great nets were thrown over vines on churches, houses, and other buildings after roosting time, and thousands of others fell victims to the law ordering their extermination. Various other devices were resorted to in order to destroy this poor, little, introduced feathered "pest"; but the House Sparrow had come to stay, and, owing to his long, long training in the cities of many countries and among all nations of men,

he had learned a whole lot about a good many things—especially about the importance of the matter of propagating his own species. Here in Washington, only a few years ago, he quit building, communal style, in the vines covering such “sacred edifices” as churches; he also practically gave up nesting in trees that lined the streets and avenues in all directions. As a matter of fact, the sparrow gave up his housekeeping in any such public places.

Now this year (1920) I have given especial attention to the nesting of this species here in this city, and the interesting fact has come to my notice that the bird has not built out in plain sight anywhere. I have been unable to observe the presence of a nest within the city limits. That they are nesting in as great numbers as ever there can be no doubt; for, as the weather warms up, one may note the males courting the females as usual, and both sexes gathering and flying away with materials for nest construction. However, both males and females have become extremely secretive; and whatever place a pair selects for a nesting-site, they make more than certain that no part of the nest is allowed to stick out beyond the entrance. On several occasions I watched a bird with some nesting material in its beak, to note where it flew, and thus discover where a nest would be later on. Every time I did so, however, the bird would drop what it had; in an unconcerned manner take up something else, or fly up into a tree until I took my departure. I have not seen a House Sparrow's nest in a tree in Washington this year; while twenty-five or thirty years ago one could count as many as half a dozen in a single tree, sometimes, on any of the busiest thoroughfares.—DR. R. W. SHUFELDT, Washington, D. C.

Notes on the Acadian Sharp-tailed Sparrow (*Passerherbulus nelsoni subvirgatus*).—On June 12, 1920, in a small salt marsh near Bunker's Island, at the southern end of Yarmouth Harbor, Yarmouth, Nova Scotia, I found the occupied nest of a pair of Acadian Sharp-tailed Sparrows. The nest proper was a neat, round cup of fine, dry, dead grass, with some horsehair in the lining. Its foundation consisted of some small masses of “eel-grass” and roots. Its dimensions were: inside diameter, 2.5 in.; outside diameter, 4.5 in.; inside depth, 1.5 in.; outside depth, 2.375 in. It was elevated above the general surface of the marsh by being placed on the top of a low, grassy ridge, about fourteen inches high, formed from material thrown up when a ditch was dug across the marsh, many years before. During some storm a mat of dead “eel-grass” had been left on top of this ridge, and this had later been lifted by the growing marsh grass, leaving several inches between it and the ground. The nest was placed at the northwest edge of this mat, about half of the nest being under it, while the other side was sheltered and concealed by grass about six inches high. The nest was not sunk in the ground at all.

Two young Sharp-tails, partly feathered, and nearly ready to leave the nest, were in their snug home, while the dried body of a third young

bird, which evidently had died soon after hatching, lay on the front edge of the nest. The living birds had their eyes open and feathers partly covering the head, back, chin, and the sides of breast and belly. A stripe over each eye and one in the center of the crown were buffy; the rest of the upper parts were fuscous, the feathers tipped with buffy; the sides of the throat were buffy, the sides of the breast whitish, streaked with fuscous, and the sides of the belly whitish. They were still so young that, when touched, they would open wide their bright red, yellow-edged mouths.

The nest was found after I had quietly watched the parent Sparrows for about an hour, while they were bringing food to their young. Most of the food appeared to be obtained on the salt marsh, within a rod or two of the nest, but the birds visited also an upland hayfield nearby. The old birds never alighted at the nest nor took flight from it, but descended and arose at various points distant from one to two yards from their home. On one occasion one of them was observed to carry off a white sack of excrement. The male sang from time to time from a piece of driftwood on the marsh about 30 feet distant from the nest. When I was examining the nest and the young birds, the parents made no demonstration for some minutes, but later they came near and uttered chip's, much like those of Savannah Sparrows. There was no difficulty in identification, as these birds, with which I have been familiar for some ten years, differ markedly in appearance and song from Savannah Sparrows or any other birds to be found in Nova Scotia.

On June 17 I again visited this nest, found it empty, and collected it. It has since been presented to the Victoria Memorial Museum, Ottawa, Ontario. When collected, the nest was thoroughly wet, evidently as a result of having been flooded by the high spring tides then occurring, there having been a new moon on June 16, for no rain had fallen at Yarmouth in the interval between my two visits to the nest. There were, of course, spring tides about June 1, the date of the previous full moon, when the nest probably contained eggs, but these would not be as high as the spring tides of the new moon, and may not have reached the nest. There is no apparent reason, however, why the spring tides accompanying the new moon of May 18 should not have been as high as those of the new moon in June and flooded the nest-site. Probably the nest was built immediately after those spring tides subsided. It would be interesting to know if this was a mere coincidence or if these birds, when nesting in salt marshes, take into account the variations in the rise and fall of the tides, and thus, indirectly, the phases of the moon!

Mr. W. H. Moore has described (Cat. of Can. Birds, Macoun & Macoun, Ottawa, 1909, pp. 507-508) some nests and eggs of this subspecies from fresh-water marshes along the St. John River in New Brunswick, but, so far as I have been able to ascertain, the present is the first description of a salt marsh nest of this species, and the first definitely identified nest

of the species recorded from Nova Scotia, where these birds are common in suitable localities in the breeding season.

On June 12, a fine, bright, windy day, Acadian Sharp-tailed Sparrows frequently delivered their flight-songs all about me during the time that I remained in their marsh, from 10.00 a. m. to 4.00 p. m. When about to sing his flight-song, the male Sharp-tail rises, on fluttering wings, diagonally upward from the marsh to a height of 25 or 30 feet, uttering meanwhile a slow series of *chip's*. He then spreads his wings and, as he sails slowly downward, utters once his husky *sh-sh-sh-ulp*, then flutters downward a few feet, with frequent *chip's*, then sets his wings and sails and sings a second time, and finally, with more fluttering and more *chip's*, descends to his perch, where he continues to sing, but is silent in the intervals between songs.—HARRISON F. LEWIS, *Quebec, P. Q.*

Notable Warblers Breeding Near Aiken, S. C.—The Swainson's Warbler (*Limnothlypis swainsoni*) is known to nest abundantly along the swamps of the Savannah River near Augusta, Ga. The hills rise steeply on the South Carolina side of the river towards Aiken, eighteen miles away and six hundred feet above sea level. The surrounding country is rolling, sandy, farming land, with numerous small streams, and a few large mill ponds. The creek bottoms are generally heavily wooded and contain patches of dense tangled underbrush and cane (*Arundinaria tecta*).

We found the first Swainson's Warblers on April 23, 1920, two together in open woods near a mill pond. On and after May 7 we always heard two birds singing in this particular neighborhood, but were unable to find a nest. One of these birds sang continuously in a narrow strip of woods between a railroad and a high-road, paying no more attention to passing trains or trucks than did the Hooded Warblers or White-eyed Vireos. Everywhere the singing birds paid very little attention to our presence. It was our experience in every instance that we could locate and approach a singing bird without much difficulty, and that he would continue singing uninterruptedly.

After May 8 we found one or more Swainson's Warblers in every suitable locality; that is, in damp woods near running water or ponds where there were thick undergrowth and cane.

On May 23 we found a nest. It was on the side of an embankment, ten feet below a carriage road, and the same distance from a small stream. We were crossing the stream on a fallen log when we looked down and saw the bird sitting on her nest about four feet away. She watched us with no sign of fear, and slipped off her nest after we had been moving about for several minutes. There were three eggs in the nest, which was fastened securely in the tops of several stalks of cane bent over, so that the nest was four and a half feet from the ground. We returned the following mid-day. One bird was on the nest, and the mate soon approached, singing as he hopped leisurely along, and took a bath in the

stream. We walked out on the log and took several pictures of the bird on the nest. Not even the click of the camera made her move or show fear. Unfortunately the pictures were not good. Another day when we arrived no bird was on the nest, but while we were watching, about twelve feet away, she returned and settled herself on the nest. May 30 two eggs were hatched. June 2 three tiny young ones were in the nest. Some tragedy occurred that night, for the following morning the nest was empty, though apparently undisturbed, and the male was singing in the distance.

Miss Ford found another nest on July 19, about a quarter of a mile away from the first nest. It was in a tangle of cat brier vine and gall berry, about three and a half feet from the ground almost on the edge of a creek, and close to a big fallen pine, against a bank of kalmia and cane. The nest contained three young birds very nearly fledged. Both parents were fluttering and chipping nearby, but they went about their business, and during the next half hour were seen to feed the young.

On July 1, Miss Ford also watched two very young birds being fed. They were hiding on the ground in very thick underbrush, and were fed by both parents. She was attracted to the spot by the singing of the parent.

The fervent singing of Swainson's Warbler was a constant pleasure this spring. As Mr. Wayne says, "Its notes are full of sweetness, and at times it is really inspiring."

A delightful experience was on the evening of June 29. Miss Ford was with a party of friends having picnic tea on the banks of a creek, when suddenly a Swainson's Warbler burst into song. He was in plain sight about forty feet away, over the high road, on the edge of the woods. He started a chorus of song from Prothonotaries, Hooded Warblers, and White-eyed Vireos, which lasted for ten minutes, until a passing automobile broke up the concert.

Kentucky Warblers (*Oporornis formosa*) were found on June 6, and again on June 7, while looking for Swainson's Warblers. They must be shy birds, for we had not found them before, nor did we hear their song. We found two families, in deep swampy woods, eight miles apart, and in each instance we saw the birds at close range, and watched both parents feeding young birds. This is unusually far east for the Kentucky Warbler to be found nesting.

Louisiana Water-Thrushes (*Seiurus motacilla*) we found to be rather abundant. Last year Mr. Wayne recorded our finding a pair breeding at Graniteville, S. C., five miles from Aiken. This spring we saw and heard them in every suitable locality around Aiken. On April 13 we found a pair while on May 23 in exactly the same spot we saw two adults feeding and followed by their very young birds.

On May 9 we found a nest partially completed and watched the bird building it, but later visits showed that it had been abandoned. On June 1, and on June 4, in different swamps we saw adults followed by young birds.—MARION J. PELLEW AND LOUISE P. FORD, Aiken, S. C.

The Yellow-throated Warbler (*Dendroica dominica dominica*) at Cape May, N. J.—While examining the Pitch Pine trees in the woods at Cape May Point at the southernmost extremity of New Jersey, on July 13, 1920, in a search for some young of the Pine Warbler (*Dendroica vigorsi*), I noticed the terminal portion of a small branch in violent agitation and focusing my binoculars upon it was astonished to see an adult Yellow-throated Warbler (*D. dominica dominica*) emerge from among the needles. I watched it feeding in this tree for some little time, hoping that it might lead the way to a nest or brood of young, but it seemed concerned entirely with obtaining food for itself. Finally it disappeared behind the main trunk of the tree and apparently flew off on the far side, as further search failed to discover it anywhere in the neighborhood. Two days later a careful search was made and after about an hour the bird was seen again in the same vicinity and was secured. It was a male with sexual organs only moderately developed and as no trace of other individuals of the species, either adult or young, could be found during the remainder of the summer, it seems probable that this was simply a stray individual that had wandered a little north of its regular range. As the Blue Gray Gnatcatcher occurs regularly in the same woods and the Mockingbird not infrequently, it would not be surprising if this species occurred there occasionally as a breeder.

One specimen of this species was secured somewhere in Cape May County by the late Harry Garrett, of West Chester, and was obtained from him by Charles J. Pennock. It is now in the collection of the Philadelphia Academy, but I have not been able to learn the exact locality of its capture. These constitute, so far as I know, the only specimens that have been obtained in the State. My specimen is now also in the Collection of the Academy of Natural Sciences of Philadelphia.—WITMER STONE, *Academy of Natural Sciences, Philadelphia*.

The Black-poll Warbler and Bicknell's Thrush at Yarmouth, Nova Scotia.—It appears to have escaped general notice that Mr. E. Chesley Allen, in a paper entitled 'Annotated List of Birds of Yarmouth and Vicinity, Southwestern Nova Scotia' (Trans. N. S. Inst. of Sci., Vol. XIV, Part 1, pp. 67-95, Jan. 5, 1916), stated that the Black-poll Warbler (*Dendroica striata*) and Bicknell's Thrush (*Hylocichla aliciae bicknelli*) are regular summer residents on the West Cape, at the entrance to the harbor of Yarmouth, Nova Scotia, and doubtless breed there. The West Cape is an island at high tide, but is connected with the mainland by a highway bridge. My attention was first called to the presence of these birds at this point by Mr. Allen.

On the afternoon of June 18, 1920, I spent two hours at the West Cape and, although a clouded sky and a high, chill easterly gale made conditions unfavorable for observing song-birds, I noticed six Black-poll Warblers and one Bicknell's Thrush in song. I have no doubt that I should have found many more of the warblers, which seemed to be plentiful,

had I not spent most of my time in a small area of dense spruce woods, searching for Bicknell's Thrush, which proved to be extremely shy, although I finally obtained an excellent view of it.—HARRISON F. LEWIS, Quebec, P. Q.

The Summer Resident Warblers (Mniotiltidae) of Northern New Jersey.—The past summer's field-work has added three northern warblers to the known summer resident avifauna of New Jersey,—the Nashville (*Vermivora ruficapilla*), Blackburnian (*Dendroica fusca*), and Black-throated Blue (*Dendroica caerulescens*). There was already reason to suspect the breeding of these species in this region as for two or three years past I had observed them the very end of May and, several years ago, had seen a male Blackburnian Warbler in June.

The ten days from June 11–21, as well as June 27–28 were spent in the mountains near Moe, west of the southern end of Greenwood Lake. Bearfort Mountain and the parallel ridge immediately northwest reach a height of 1400 feet, the narrow valley separating them lying about 1100 feet above sea level.

The Nashville Warbler is a common bird in this region. Eight individuals, mostly singing males, were observed between June 12 and 20, and no doubt many more could have been found had special effort been made. The white birch (*Betula populifolia*) groves bordering the heavier timber are their chosen haunts.

A male Black-throated Blue Warbler was seen on June 21, by the road up the mountain from Greenwood Lake to Moe. One has been noted in the same spot on May 31. This species proved to be fairly common in a tract of mixed hemlock and hardwood on the ridge northwest of Bearfort Mountain. Here also several male Blackburnian Warblers were found in full song and one female was observed. This spot was visited on two occasions, the 19th and the 27th. Altho no nests of any of these species were found all the circumstances indicate that they breed in the region.

The Chestnut-sided, Golden-winged, Black-throated Green and Canada Warblers and the Northern Water-Thrush are all common summer residents here, though the last named is very local. The species of more southern or general distribution are the Black-and-White, Worm-eating, Yellow, Hooded and Northern Parula Warblers, the Northern Yellow-throat, Redstart, Ovenbird and Louisiana Water-Thrush. As only a single Northern Parula was observed (on June 17) the exact status of this species is uncertain. A Yellow-breasted Chat was heard singing at the southeast foot of Bearfort Mountain near West Milford, on June 28.

There can be no further doubt that the Northern Water-Thrush (*Seiurus noveboracensis*) breeds in New Jersey. This species was common in two swamps on the mountain northwest of Bearfort, and a full-grown young bird was seen on June 27. The haunts of the two Water-Thrushes are distinct, the northern species inhabiting the swamps while its southern

relative is found along the rocky mountain brooks. On the other hand the Hooded and Canada Warblers are commonly observed together, though the latter is largely restricted to the thickets of rhododendron which is not the case with its congener.

The Canada Warbler is now known as a summer resident in three widely separated localities in northern New Jersey—Budd's Lake, Morris County (cf. Auk, April, 1917, p. 214), Bear Swamp, Sussex County (cf. Auk, Jan., 1920, p. 137) and the region here described in the northwestern part of Passaic County.

Two errors in the note published in 'The Auk' for January, 1920, may here be corrected. Bear Swamp was stated to be near "Crusoe Lake";—this should read "Lake Owassa formerly known as Long Lake." In the last line of the first paragraph, for "p. 24", read "p. 214."—W. DEW. MILLER, *American Museum of Natural History, New York City.*

A Peculiarly Marked Example of *Dumetella carolinensis*.—In speaking of the female Catbird, Mr. Ridgway says (Birds of North and Middle America, Vol. IV, p. 218): "chestnut of under tail-coverts more restricted and broken through greater extension of the basal and central slate-gray." An extreme case of the restriction of the chestnut of these feathers is presented by a specimen recently captured by the writer at Washington, D. C.

At first glance, the bird presented an almost unbroken gray appearance relieved only by the black cap. This grayness was particularly noticeable on the lower tail-coverts, and it was only upon closer scrutiny that the fact was revealed that these feathers were not of solid color. Basally, there was no trace of chestnut, which was present only in the form of a very narrow edging (in no place as much as a sixteenth of an inch in width) beginning about midway of the feathers and continuing around the tips.

An examination of the specimens of this bird in the National Museum and Biological Survey collections reveals the fact, as noted by Mr. Ridgway, that while "restricted and broken" there is generally at least a terminal one-third or one-fourth of the characteristic chestnut color. In the extensive series examined, no specimen was found that even approached the one in question. The bird was otherwise normal.—FREDERICK C. LINCOLN, *Biological Survey, Washington, D. C.*

The Hudsonian Chickadee in New Jersey.—The writer has recently examined a small collection of skins of local birds made by the late Charles R. Sleight of Ramsey, New Jersey. The only specimen of unusual interest in the collection is a Hudsonian Chickadee (*Penthestes hudsonicus hudsonicus*) taken at Ramsey, on November 1, 1913, and now in the collection of the American Museum of Natural History.

Dr. Charles W. Townsend has examined this specimen and agrees with me that it is true *hudsonicus*. In general coloration it agrees closely with

birds from Homer, Alaska, except that the rump is somewhat less gray. It cannot be matched by a single skin of *littoralis*, of which I have compared a good series from Maine, New Brunswick and Nova Scotia. In the majority of these birds the cap and back are conspicuously lighter, more buffy, brown. In *P. h. nigricans* these parts are decidedly darker than in the Ramsey specimen.

It will be recalled that there was a notable southward flight of brown-capped Chickadees in the fall of 1913, the first being recorded on October 29, at South Sudbury, Massachusetts. The species was also observed in Connecticut and Rhode Island (cf. Wright, Auk, 1914, p. 236, and Griscom, *l. c.*, p. 254). According to Dr. Townsend (Auk, April, 1917, p. 160) both of the eastern races of this Chickadee, *P. h. littoralis* and *P. h. nigricans*, were represented in this migration.

The specimen here recorded is the first individual of this race ever taken or seen in New Jersey, so far as we know. In 'The Auk' for April, 1917, p. 218, the writer recorded a specimen of *P. h. nigricans* taken near Plainfield on December 31, 1916, which at that time was the first record of the species from the state. Other individuals observed during the same winter at various localities as far south as Princeton, were probably of the same race. Incidentally it may be well to note that the tail of the Plainfield specimen is very imperfect, and the measurement given by Dr. Townsend (Auk, *l. c.*, p. 163) is incorrect. *P. h. littoralis* is as yet unknown from New Jersey.—W. DEW. MILLER, *American Museum of Natural History*, N. Y.

The Plain Titmouse a New Bird for Oregon.—Among a number of bird skins recently presented to me by my friend, Professor W. M. Clayton, of Santa Ana, California, who lived at Ashland, Oregon, from 1899 to 1902, there is a skin of the Plain Titmouse (*Baeolophus inornatus*), a male shot on April 17, 1900, at Ashland, Oregon, in oak scrub. While there is really nothing unusual in the fact that the bird should be found there, since it is found in Siskiyou County, California, just south of the Oregon boundary line, yet so far as I know it has never been recorded from Oregon. Neither the A. O. U. 'Check-List,' 'The Auk,' nor the 'Birds of Oregon' make mention of it so far as Oregon is concerned. I have no access to the last volume of 'The Condor' and can not say whether a record is there to be found or not. As long, however, as no proof is forthcoming to the contrary, I believe I am entitled to hail this species as a new bird for Oregon.—W. F. HENNINGER, *New Bremen, Ohio*.

The Singing of the Ruby-crowned Kinglet (*Regulus c. calendula*). In an interesting paper entitled "Geographical Variation in the song of the Ruby-crowned Kinglet" ('The Auk,' Vol. XXXVI, pp. 525-528, October, 1919), Mr. Aretas A. Saunders has brought to the attention of the readers of this journal a constant difference which he has observed to exist between the songs of migrant Ruby-crowned Kinglets in the north-

eastern part of the United States and the songs of individuals of the same species breeding in Montana. Mr. Saunders has represented the two types of song graphically and has explained that the variation occurs in the third, final, and loudest part of the song. He says: "Eastern birds sing it as a series of triplets, the notes of each triplet rising in pitch, and the last note accented, that is, both loudest and longest in duration. Western birds sing a series of double notes, all on the same pitch, the first note of each double being the accented one."

In many widely-separated localities in the province of Nova Scotia, where this Kinglet is on its breeding-grounds, the final part of its song invariably, in my experience, corresponds with Mr. Saunders' description of the same part of the song of eastern birds as heard by him in migration farther south. Using written syllables in place of Mr. Saunders' graphs, with which I am not familiar, I should give the Nova Scotian type of ending, as *wud-a-weét, wud-a-weét, wud-a-weét, wud-a-weét*.

About Quebec, P. Q., which is the only place outside of Nova Scotia where I have heard the song of this bird, the species is a transient migrant only, and the songs differ much in type of ending. My interest having been aroused by Mr. Saunders' paper, I recorded the type of song-ending used by each Ruby-crowned Kinglet which I heard singing about Quebec during the spring migration of 1920. As the birds were transients, there was no way of determining identity of individual birds heard on different days, and each bird heard each day was therefore recorded as a unit. The first record was made on May 2, the last on May 31. At the close of the migration the records were grouped by classes and totalled, with the following results:

TYPE OF SONG-ENDING.

- | | |
|---|----------|
| 1. <i>wud-a-weét, wud-a-weét</i> , etc. (3 syllables, accent on third)... | 1 record |
| 2. <i>pul-é-cho, pul-é-cho</i> , etc. (3 syllables, accent on second).... | 2 record |
| 3. <i>jim-in-y, jim-in-y</i> , etc. (3 syllables, accent on first)..... | 50 " |
| 4. <i>you-éét, you-éét</i> , etc. (2 syllables, accent on second)..... | 1 " |
| 5. <i>pé-to, pé-to</i> , etc. (2 syllables, accent on first)..... | 9 " |

Total number of singing birds recorded.....63 "

It will be observed that:

1. All possible classes of single-accented two-syllable and three-syllable phrases, including both of those noted by Mr. Saunders (Nos. 1 and 5,) were recorded.

2. The type of phrase (No. 1) recorded by Mr. Saunders in the eastern United States and by myself in Nova Scotia was noted but once at Quebec.

3. The type of phrase (No. 5) recorded by Mr. Saunders from Montana only was the second in frequency of occurrence at Quebec.

4. The majority of the songs heard at Quebec are of a type (No. 3) not noted in Montana, Nova Scotia, or the Atlantic seaboard of the United States.

Mr. Saunders suggested that the difference in songs noted by him might be of subspecific value. The evidence presented above, showing five types of song in one northeastern locality, renders doubtful the existence of any relationship between these song-types and true subspecific characters.

It is possible, however, that these differences in song may be of use in determining the migration routes of the Ruby-crowned Kinglet. Song-type No. 1, and no other, has been recorded by Mr. Saunders from "Vermont, Massachusetts, Connecticut, New York, New Jersey, Pennsylvania, and Alabama," and by myself from Nova Scotia, but it is very rare at Quebec. Apparently, then, few of the Ruby-crowned Kinglets which migrate northward in the United States east of the Alleghany Mountains pass near Quebec; it is probable that nearly or quite all of them breed farther eastward, some of them in Nova Scotia. This tends to confirm what might be expected, for, although Quebec is about as far east as Boston, the breeding-range of the Ruby-crowned Kinglet extends more than eight hundred miles to the eastward of Quebec, and this great territory should easily accommodate in the breeding season all the individuals of the species which have migrated along the narrow Atlantic seaboard of the United States. Furthermore, if the birds which pass Quebec have not come from the eastern side of the Alleghanies, they must have come from the western side. Those who have the opportunity to compare songs of the Ruby-crowned Kinglet between the Alleghanies and the Mississippi with the records made at Quebec can assist in determining this. It seems probable that there can be proven in the case of this species a strong northeastward movement from the basin of the Mississippi to tide-water in the vicinity of Quebec; a movement which I believe to be participated in by many other species in whose cases the evidence is not yet so clear.—HARRISON F. LEWIS, *Quebec, P. Q.*

Notes from Seal Island, Nova Scotia.—In 1884, in Volume I of 'The Auk,' J. H. Langille published an interesting account of the recently described Bicknell's Thrush as found by him breeding in Seal Island, a low, spruce-covered island, twenty miles off the southeastern point of Nova Scotia. Since then the island has been visited by Bent, Job ('Wild Wings,' 1905, Chapter X), Bishop, Cleaves and other ornithologists. I stayed there from July 10 to 14 of this summer (1920) and have thought it worth while to record the present status of the birds of this interesting island.

Black Guillemots, formerly so common, have dwindled to less than a dozen pairs and Puffins are entirely extirpated. Fully a thousand Herring Gulls nest there and possibly a few Common Terns, while the burrows of Leach's Petrel are everywhere to be seen in the peaty soil of the island. Counted twenty-seven Eiders, which we disturbed from under spruce bushes and one with a brood of four downy young. Two or three pairs of Semipalmated Plover were breeding and the downy young seen. Spotted Sandpipers were common.

Of land birds I found the following, all evidently breeding: Kingbird, Northern Raven, Crow, Cowbird, Savannah Sparrow, White-throated Sparrow, Slate-colored Junco, Song Sparrow, Barn Swallow, Tree Swallow, Yellow, Myrtle and Black-poll Warblers, Maryland Yellow-throat, Redstart, Winter Wren, Acadian Chickadee, Bicknell's and Olive-backed Thrushes and Robin.

Black-poll Warblers were abundant. I found only two Olive-backed Thrushes. Bicknell's Thrush was very common in the low spruce woods. Its song always suggests to me the song of the Veery but it is more thin and wiry, as if it were played on the strings of a zither. I found the bird very tame, and I frequently watched it from a distance of five or six yards.

Mr. John Crowell, the keeper of the light for many years, and his elder daughter, Mrs. Bernice Meredith, have taken great interest in the birds of the island and their conservation, and have made a small collection of specimens which they have mounted. Among these the following are worthy of record: Purple Gallinule, Saw-whet Owl, Long-eared Owl, Mourning Dove, Black-billed Cuckoo, Scarlet Tanager and Summer Tanager. It is to be hoped that the island will be made a Bird Reservation by the Provincial Government.—CHARLES W. TOWNSEND, 98 Pinckney St., Boston, Mass.

Some Summer Residents of Dutchess County, N. Y.—With a view to listing the resident species for Dutchess County, N. Y., and with the purpose of eventually making a zone map of these birds, the writers spent June 12, 25 to 29, and July 11 and 13, 1920, in the eastern part of the county and found conditions very different from those existing in the lower altitudes along the Hudson River. This was especially true with regard to the Mniotiltidae.

At Whaley's Lake (altitude 690 feet) in the southeastern part of the county and not more than sixty miles from New York City, we found two Bald Eagles—one fully mature bird and an immature specimen. They were seen several times flying to and from Mulkin's Hill (1200 feet) but a search failed to reveal any nest. Mr. Eaton, in 'Birds of New York,' mentions the Bald Eagle as breeding at "Whelby Pond," and it is thought that this place is undoubtedly meant.

On Niggerbush Mountain (1810 feet), near Mt. Riga Station, in the extreme northeastern corner of the county, another Eagle in dark plumage was observed.

The Warblers were especially numerous about Whaley's Lake. On about one acre of scrubby growth on the easterly slope of Mulkin's Hill at an altitude of about nine hundred feet the following were observed: Black and White, Worm-eating, Blue-winged, Golden-winged, Nashville, Chestnut-sided, Ovenbird, Maryland Yellow-throat, Canada and Redstart. About a hundred feet higher a fine Brewster's Warbler was discovered and in a swamp on the summit a Water-Thrush, presumed to be

the Louisiana, was heard scolding. Near the lake shore, at seven hundred feet, were the Yellow Warbler and Yellow-breasted Chat.

On the east side of Whaley's Lake, opposite Mulkin's Hill, where a number of hemlocks grow, the Black-throated Blue and Black-throated Green Warblers were found. These two species were, however, much more common in Turkey Hollow, in the north-eastern part of the county, and were usually met with at an altitude of about eight hundred to a thousand feet, the Black-throated Green only when there were plenty of hemlocks about.

In the Harlem Valley, between Pawling and Wingdale, on the banks of Swamp River, less than five hundred feet above sea level, a Brown Creeper was found singing both on June 27 and July 11.

On top of the Niggerbush, mentioned above, no less than five Hermit Thrushes were found singing.

The following species have therefore been added to our list of probable breeding species in this county:

Bald Eagle, one pair and one individual.

Blue-winged Warbler, one male and one fledged young.

Brewster's Warbler, one male.

Nashville Warbler, four males and one female.

Black-throated Blue Warbler, fifteen males, several females and young.

Black-throated Green Warbler, twelve males.

Canada Warbler, twelve males and several females.

Brown Creeper, one male.

Hermit Thrush, five males.

ALLEN FROST AND MAUNSELL S. CROSBY. Rhinebeck, N. Y.

Bird Notes from Collins, N. Y.—A male Cerulean Warbler (*Dendroica cerulea*) appeared here on May 16, 1920, the first one to be recorded for seven years.

During February two Northern Pilated Woodpeckers (*Phloeotomus pileatus abieticola*) visited the hospital woods, the first record for the species. White-winged Crossbills (*Loxia leucoptera*) were present during February and until March 3. Cardinals (*Cardinalis c. cardinalis*) continue to be seen every year on the Cattaraugus Reservation, seven being the greatest number observed in a single season.

A female Red-bellied Woodpecker (*Centurus carolinus*) was recorded May 9, the first since the winter of 1916-17, when one was reported two miles from here.

There was at no time a great wave of migration during the spring and many species usually seen were absent or extremely scarce.—DR. ANNE E. PERKINS, *Gowanda State Hospital, Collins, N. Y.*

Additions to the "Birds of Allegany and Garrett Counties, Maryland."—In Volume XXI of 'The Auk,' pp. 234-250, I published a list of birds bearing the above title, adding several species from time to time,

as subsequent visits to this beautiful region or observations of correspondents enabled me to do. Such added species were the Barn Owl, Savannah Sparrow, Mockingbird (XXVI, p. 438), and later the Winter Wren as a breeder in the highest parts of Garrett County. My last two visits in 1918 and the present year, besides revealing many interesting changes, enable me to add the following species to the list:

Guiraca c. caerulea. BLUE GROSBEEK.—On July 9, 1918, while going up the bush-bordered path on one of the hills at Cumberland, I saw a family of old and young of this species, which I had never encountered in Maryland before. As if to obviate the necessity for me to explain away the objection that they might have been Indigo-birds, a family of this species started up at the same place and joined in the commotion going on.

Sturnus vulgaris. STARLING.—In its westward invasion the Starling has now reached Cumberland. Under date of February 27, 1920, my friend, Mr. John A. Fulton, of Cumberland, wrote me that he had for several weeks noticed a flock of apparently new and strange birds about the city, but since they were silent and always flew high, he could not make them out. About this time they commenced to make their headquarters in the court house tower and in the vines on the Episcopal church, where they were recognized as Starlings. To make matters certain, the janitor of the church knocked one down with a stick, which specimen was brought to Mr. Fulton, who in turn was so kind as to send it to me. There were about 100 in the flock. Later in the spring they would spend the day along the edge of the Potomac, but for the night they would return to the above-mentioned buildings.

Iridoprocne bicolor. TREE SWALLOW.—During my residence at Cumberland with the numerous excursions into various parts of the two westernmost counties of the state, together with the several subsequent visits I had never once seen this species, not even as a migrant—probably an oversight. Therefore I was much surprised to find it this summer as a summer resident. I saw three repeatedly at Crellin, near Oakland, a mile from the West Virginia line, on June 29 and the following days. They entered holes in dead trees, which had been killed by the damming of the Youghiogheny River for sawmill purposes, resulting in a pond-like widening out of the river, which otherwise here is merely a creek. No doubt the mates were in the holes incubating eggs. The Rough-winged Swallow, which I had so far only seen in the lower parts of the region, nested in the same trees.

Passerculus sandwichensis savanna. SAVANNAH SPARROW.—I was surprised to find this bird in numbers at Accident, in the higher parts of Garrett County. I had seen it once only, in 1906, near Oakland, and here it was this year plentifully. It was not here in 1914 and 1918, because I am certain I could not have overlooked it.

Compsothlypis americana usneae. NORTHERN PARULA WARBLER. I had never seen this bird as a summer resident in the higher parts of

the region, but I saw and heard a male at Crellin, June 29, and one at Accident, July 8, 1920.

Melospiza georgiana. SWAMP SPARROW.—In a large bog between Negro and Meadow Mountains, near Accident, I found a breeding colony of Swamp Sparrows and heard their song from a small swamp near Oakland, on June 28 of this year. This extends the breeding range somewhat from that given in the 'Check-List,' where western Maryland is not included.—G. EIRIG, *River Forest (Oak Park P. O.), Ill.*

Rare and Unusual Birds in the Chicago Area During the Spring of 1920.—The spring of 1920 has been unusual to say the least. Many common birds were unaccountably rare, and many very rare ones were observed. The severe winter and heavy snowfall in Canada drove many birds such as the American Crossbill (*Loxia curvirostra minor*), Bohemian Waxwing (*Bombycilla garrula*), Redpoll (*Acanthis linaria*), etc., down from the north. These have been recorded by Mr. Coale and myself. Early in March we had some fine weather, and, as a consequence, a large migration of about sixty varieties of birds literally poured in from the twentieth to the thirtieth of March. Now, however, the weather took a sudden turn and we had snow-storms every few days. This of course retarded the migration dreadfully. Since the twentieth of April, however, the weather has been nice, and the migration more or less regular. A list of the rare and unusual birds which I have observed this spring follows:

Aristonetta valisineria. CANVASBACK.—On April 10, I saw one male of this species on Wolf Lake, about twenty miles south of Chicago. On April 24, I saw a flock of six birds of both sexes at the same place, and was informed by a farmer that he had seen the same flock there for two weeks. This formerly common bird is rapidly becoming rarer in our area.

Grus canadensis. SANDHILL CRANE.—On April 22, while looking for birds on the Wooded Island, Jackson Park, Chicago, I saw a large bird about fifty feet above my head, attempting to fly west against a very strong wind. I immediately looked at the bird through my glasses and was able to study it for the space of twenty minutes. It continued to struggle against the wind, but to no avail, and at last was blown out of sight to the south. The bird came within thirty feet of me at one time, and of course its identity was unmistakable. It flew with legs and neck outstretched, I was even able to discern the red on the head, and the brownish on the wings. This bird is an exceedingly rare and irregular migrant. Some weeks after seeing the bird, I met a gentleman who had observed and identified the bird on the same day.

Macroramphus griseus scolopaceus. LONG-BILLED DOWITCHER.—On May 14 I observed several birds of this species flying with a large flock of Yellowlegs (*Totanus flavipes*), at Hyde Lake. I shot into the flock and secured a fine adult female Dowitcher, which proved to belong to the

subspecies *scolopaceus*. Both Dowitchers are rather rare migrants here, but I think the Long-billed is the commoner bird. The bird mentioned above is now in my collection.

Xanthocephalus xanthocephalus. YELLOW-HEADED BLACKBIRD.—On April 24, I saw a flock of about fifty birds of this species in the rushes in Hyde Lake. More arrived later and to a large extent supplanted the Red-winged Blackbird (*Agelaius phoeniceus*). These birds were at one time very abundant in the marshes and sloughes south of Chicago, but since the advent of the large factories and chemical plants, many of their best nesting grounds have been destroyed. At the present rate, the birds will be very rare in a few years.

Spizella pallida. CLAY-COLORED SPARROW.—On May 8, several friends and I noticed a small sparrow unlike anything else we had ever seen, at Wolf Lake. The bird was very tame, and allowed us to study it at very close range. Unfortunately I had no gun, but the brown on the sides of the head and the markings in general were so well defined and distinctive as to leave no room for doubt as to the bird's identity. This bird is an accidental straggler from the west, and has been taken in the Dunes by Mr. Stoddard.

Spiza americana. DICKCISSEL.—This bird breeds locally west of Chicago, but I have included it in this list because of the peculiar circumstances under which I saw it. On May 10, I was walking along Lake Park Ave., on my way to Jackson Park, at about five o'clock in the morning, when I noticed a flock of English Sparrows (*Passer domesticus*) across the street, and although one of the birds impressed me as very light, I paid no heed and went on. Hardly had I gone twenty yards when the birds flew across the street and two of them lit on a small tree. Now to my great surprise, one commenced to sing. I immediately retraced my steps and saw that the bird which was singing was a male Dickcissel. It seems strange to meet this bird of the fields and meadows in the heart of the city.

Dendroica discolor. PRAIRIE WARBLER.—On May 6, I saw one male of this species. The Prairie Warbler is always regarded as a rare migrant, but I have seen several in the Park.—NATHAN F. LEOPOLD, JR., 4754 Greenwood Ave., Chicago, Ill.

Items Relative to Some Costa Rican Birds. **Catharista urubu braziliensis.**—Apropos the articles in recent numbers of 'The Auk,' bearing on the subject of the power of the various senses of the Black Vulture. I may be allowed to record an incident, concerning the Central American form of the species, that came under observation of the writer and his wife, while located near Juan Viñas, Costa Rica, in April, 1920. We occupied a house, which was of considerable pretensions, and in good repair but had not been occupied, other than temporarily, for several years. Soon after settling there, we noted a particular Vulture, that came almost daily to the garden, surrounding the house, where it was usually to be seen perched on a fence

post, or on the roof-ridge of the house itself. One of the windows of the kitchen was usually left open. On two or three occasions the Vulture alighted on this window-ledge, but seeing some one within, quickly departed. When we were away from the house it was our custom to close the window. However, one morning, we overlooked doing so. On this occasion we left a good fire burning in the cook-stove, on which was placed a stew-pan, with cover, containing a piece of meat and portions of several kinds of vegetables.

Returning from our tramp, we were surprised to find that our prospective dinner had entirely disappeared, even to the liquid; although the pan yet remained on the stove. The cover was on the floor nearby. The stove-top had not entirely cooled when we reached the house. All too reliable evidence as to the identity of the intruder was to be found in the droppings deposited on stove and floor.

After this experience, our precautions were more rigorous, yet this bird, on one occasion thereafter, got inside the room, but we were present and nothing happened.

Picolaptes affinis neglectus.—This is one of the commonest Tree-Creepers (*Dendrocolaptidae*) over the wooded uplands of Costa Rica. The individuals of the species that came under attention here were found on the south slope of the Volcano Irazu, at about 10,000 ft. altitude, while camping there during May, 1920. A pair of birds were seen on the 11th, both working up the trunk of a large tree that grew in a heavily wooded ravine. Owing to this latter fact, I was as near as twenty-five feet of their position, before I observed them. I recognized the species at once; also noting the abbreviated tail on both, a condition that seemed to much impede their progress in climbing. I secured the ♂ of this pair. Then it was that I observed that the rectrices, except the middle pair that were replaced by fresh ones, very short and mostly in the sheath, had suffered severance, about one inch from their base, by some sharp instrument, and not by reason of wear, because the shafts all showed fresh cleavage, and no fraying. Moreover, this trimming was perfectly regular, and of the form of an inverted V. The operation therefore must have been performed with bill by the bird itself. The fact that this mutilation of the tail was seen in both birds, before I had shot, eliminated the possibility of that source for a solution; aside from the seeming impossibility of shot trimming the feathers, as has been described.

Gymnostinops montezumae.—While staying at Juan Vifias, I came across many nesting colonies of this *Oropendola*, and with the assistance of my wife and a native boy, a small colony of some thirty nests was inspected about April 1, 1920. These nests were hung on a medium-sized Guava tree that stood at least one hundred feet from any other tree. Three limbs were sawed off: one supported seven nests, one three, and one but two. During this operation most of the individuals of this colony gathered in the nearest available tree, and kept up a great clatter, until a hawk (*Leptodon uncinatus*) made an unsuccessful dash

into them. This both dispersed and quieted them. Although all these nests were completed, even to the abundant supply of fresh leaves, that new nests always contain, no eggs had been laid. So the nests still attached to their respective positions were left at the base of the nesting tree.

A week later we chanced to return to the spot. The colony contained about the original number of nests hung in the tree. On the ground were the limbs in the place we had deposited them. But the only traces of the nests that had been attached were some short strands so inextricably woven about the leaves and their petioles that they defied unravelling.

Junco vulcani.—We were fortunate enough to meet with this snow-bird in considerable numbers during our visit to the Volcano Irazu. Our observations differed somewhat from those of previous observers inasmuch that we found them among the oak timber, as low as 10,000 ft. as well as above the timber line. What I wish to record is the difference in amount of plumage wear this species is subject to under varying degree of humidity, at the same relative attitude and within an area of a few square miles.

As is well known, the south slope of the Volcano Irazu, although on the Caribbean slope of the continental divide, lies in what is termed the "shadow of the Volcano," and is thus deprived almost entirely, from December to May, and to a considerable degree during the balance of the year, of the perennial moisture carrying clouds that blow in from the East and Northeast. About three miles to the east of the main crater of the Volcano is a pass, through which a road passes that leads to the Volcano Turrialba. As soon as this pass is reached, the rainfall and humidity greatly increase and it is noticeable that pastures and herbaceous vegetation generally do not dry up in the winter and spring months as they do south of Irazu. The demarcation line between the wet and dry zones is but a couple of hundred feet wide at the pass.

Such individuals of this Junco as were taken on the slope of Irazu were all in very worn plumage, that could not be matched by a single specimen that came under observation taken at the pass or to the eastward. For the most part these individuals from the humid zone were in comparatively fresh plumage, such as the species should wear at the beginning of the nesting season, and from examination of the sexual organs I judged that the breeding season was near. While I saw no young of the species during my stay (May 3 to 19, 1920) I did shoot a female on the 10th, within the dry zone, carrying a crane-fly (*Tipula*?) in her bill; and another female was taken on the 6th, while I was making the trip to the crater that had her bill full of dried grass stems.—AUSTIN PAUL SMITH, Cartago, Costa Rica.

Observation of a Remarkable Night Migration.—A flock of birds, present in such numbers that they were continually passing across the field of the theodolite telescope, were noticed in the course of following

the track of a pilot-balloon released at this station to determine the upper-air currents on the afternoon of May 3, 1920. Since the birds appeared to be oriented in the same general direction and to be flying in compact group formation, I decided to take readings of the positions of the individuals which could be "spotted" in the telescope, with a view to determining the speed, direction and incidently the altitude of the birds.

Before giving the details of the observations I may state that no attempt has been made to come to a conclusion as to the kind of birds noted, but my belief is that they were either hawks or ducks, owing to the similarity of their mode of flight to that of the wild-goose but with more rapid beating of the wings than in the wild-goose, with whose flight I am familiar. At the distance at which the birds were observed neither color nor fine definition of type could be seen, although the spread of a single wing of the individuals seemed to approximate the size of the pilot-balloon which was last seen at about the same level as the birds were using.

Conditions were especially propitious for determining the altitude of the birds, for the clouds closely beneath which they were winging were of the cumulus type, with flat, equally elevated bases and domelike tops. Luckily the balloon rose into the base of one of these clouds and was lost to view at an altitude of 1700 meters.

Upon losing the balloon, I turned the theodolite against a background of cumulus cloud and awaited the arrival of an individual of the flock to come within the field. Some idea of the large numbers of the birds can be had from the fact that it was possible to pick up at random a space in the sky and promptly find one of the birds winging across it. The birds were more than a mile distant and efforts to see them with the naked eye were fruitless.

Both of the individuals sighted were kept in sight for 60 seconds; before a second minute-interval elapsed they had become immersed in cloud and lost to view. The first bird "spotted," whose altitude was assumed to be 1600 meters by reason of its passage under the cloud base, was picked up at azimuth 193.2° (0 equal to North, 90 equal to East), and at elevation 25.2°. Sixty seconds later it was found at azimuth 198.9°, and elevation 21.2°. The resulting track shows a ground speed of 13.2 meters per second toward azimuth 223° (SW).

The second bird was picked up at azimuth 182.3°, elevation 36.2°; sixty seconds later it was found at azimuth 189.2°, elevation 31.7°. Its resulting track shows a ground-speed of 9.3 meters per second toward azimuth 221° (SW), when an altitude of 1800 meters is assumed. This was arrived at from the fact that this bird flew into the edge of one cloud after passing indistinctly through the extreme lower side of another cumulus cloud.

As the first individual was encountering a north wind of 4.5 meters per second (as computed from the pilot-balloon run) his wing-speed was 7 meters per second. The second individual encountered a north-north-west wind of 4.0 meters per second at the 1800 meter level, hence its wing

speed was 11.5 meters per second. It was quite noticeable that the birds were being blown off-course, because of the lack of similarity between the direction in which they were headed and the direction in which they were progressing.

Emphasis should be given to the good fortune in having two factors known within narrow limits: the altitude of the cloud bases, and the nearness of the birds' levels to the cloud bases. I may add that on rare occasions birds pass singly across the field of the theodolite, but no instance of such numbers being visible in the field at one time has ever been my experience in following balloons during the past two years.

It should be remarked that there is little by which to identify the kind or even the type of bird observed. The mean diameter of the balloon was .71 centimeters, and it is estimated that the spread of a single wing of one of the birds would have completely covered the balloon. There seemed to be moderate length of neck, little or no length of tail, and no distinguishable trailing legs about these birds. The main point of interest probably is the determination beyond question of the rate of speed maintained by birds evidently flying with a fixed objective in flock or group formation.

I would add that the further observation of these birds would have been carried out had time permitted, but as the immediate despatch of upper-air data computed from the balloon run is of great urgency it was necessary to bring the theodolite sighting to a close.

The kind assistance of Mr. B. B. Whittier, Observer U. S. Weather Bureau, who checked and corroborated the readings is gratefully acknowledged.—C. G. ANDRUS, *Observer, U. S. Weather Bureau, Lansing, Mich.*

RECENT LITERATURE

Townsend's 'Supplement to Birds of Essex County.'—In 1905 the Nuttall Ornithological Club published an admirable volume on the birds of Essex County, Mass., by Dr. Charles W. Townsend which has ever since been the standard work of reference on the coastwise bird-life of Massachusetts. Fifteen years have now elapsed and the Club presents a "supplement" by the same author,¹ which is rather more than half the size of the original.

Dr. Townsend has gathered together such a vast amount of additional information during this period of years that many changes have been found necessary in the dates of occurrence and status of the species and it was thought best to reprint the entire list with the statements of the character of occurrence of each species and under these such new matter in regard to habits and life history as had been secured. Sixteen species have been added and two dropped bringing the total to 335. The nomenclature has been revised to accord with the 1910 edition of the A. O. U. 'Check-List' although one form, the Labrador Chickadee, has been included which, as explained, has not yet been recognized by the A. O. U. committee. There is a bibliography covering the years 1905-1915 and a good index.

The volume is a fitting companion to the earlier list with which it conforms in size, typography and style. The two together form not only the up-to-date list of the birds of Essex County which the author aimed to present, but a repository of first-hand observation on the habits of most of the species mentioned, which must be consulted by anyone who may be compiling an exhaustive bird biography or reading up the life history of a species for his own edification.

For the general reader however we think the introductory chapter on "Changes in the Bird Life of Essex County since 1905," will possess a peculiar interest, so well does it summarize the changes that we have all noticed, even though we but partially appreciated them, in our own neighborhoods. There has been the astonishing increase in the interest in birds and in the preservation of birds and game; the devastation of bird haunts and the driving away of certain species in the zeal of some other supposedly worthy activity—the war on the Gypsy moth in the case of Essex County, but in other places the war on the mosquito or the chestnut blight, etc.—the advent of the Italian pot-hunter; the use of the automobile by hunters in covering large areas of country in a single day; and the use of the field-glass in bird-study—indispensable in the

¹ Supplement to Birds of Essex County, Massachusetts. By Charles Wendell Townsend, M.D. With one Plate and Map. Memoirs of the Nuttall Ornithological Club. No. 7. Cambridge, Mass. Published by the Club. August [sic] 1920. pp. 1-196 [reviewed from unbound sheets].

hands of the trained observer, but disastrous in those of the "enthusiastic amateur." All these and other factors are mentioned and their influence upon bird life and bird study discussed. A half-tone plate of the Ipswich River in Wenham Swamp forms the frontispiece to the volume and the map of the county which appeared in the original list is here reproduced for handy reference.

In the whole plan of the work and its execution the author has been peculiarly happy and both he and the Nuttall Club deserve the congratulations of ornithologists upon the appearance of the volume.—W. S.

Bannerman's 'Birds of the Canary Islands.'¹—In 'The Ibis' for 1919 and 1920 Mr. David A. Bannerman has been publishing in instalments a comprehensive paper on the birds of the Canaries. The seven parts have now been issued as a separate comprising 300 pages which easily takes its place as the authoritative work on the subject.

It is based primarily upon the author's field work in the islands, he having spent a portion of every year from 1908 to 1913 in the archipelago but other material has been examined and all of the literature bearing upon the Canary Islands carefully studied. The list includes transient species as well as residents and is prepared on a definite plan consistently carried out, which materially aids anyone who may make use of it. The nomenclature is carefully worked out with a reference to the original description of each species, and the type locality. Then follow a concise statement of the nature of its occurrence in the Canary Islands; a full discussion of specimens and relationship, with pertinent quotations from various works on the birds of the Islands and from the author's personal records, all of which go to make up a very full account of the habits and distribution of each species, and finally the range is given, which in the case of resident species is divided into two paragraphs, one giving the range in the islands, and the other the range beyond the archipelago, if the species is not endemic.

In the introductory pages there is a bibliography and an itinerary of those visitors who have done the most important ornithological work on the islands. There is likewise a statement by the author of his methods, including an apology for rejecting the "nomina conservanda" of the B. O. U. 'List.' In our opinion however he is to be heartily congratulated upon his stand in this matter. Uniformity and stability in nomenclature can only be obtained by strict adherence to the rules of the International Code no matter where they lead us.

The summary and conclusions which constitute the last part of Mr. Bannerman's paper give the author's views on many of the general prob-

¹ List of the Birds of the Canary Islands with Detailed Reference to the Migratory Species and the Accidental Visitors. Parts I to VII. By David A. Bannerman. From 'The Ibis', 1919, pp. 84-131; 291-321; 457-495; 708-764; 1920, 97-132; 323-360; 519-569.

lems involved in a study of the bird life of the group. We here learn that of the 217 species recorded from the islands, 75 are regular breeders, while 142 are transients or of casual occurrence. They are further grouped (with some duplication) as Residents 61; Partial Residents (i. e., the resident population augmented at certain seasons by migrants from elsewhere) 5; Summer Visitors (nesting regularly but not wintering) 9; Winter Visitors 15; Birds of Passage 32; Annual Visitors (time of occurrence irregular) 5; Occasional Visitors 30; Rare Visitors 72. There are also given in an appendix 25 species recorded from the islands on evidence insufficient to include them in the main list, and 54 which have been recorded as Canarian birds from such unreliable sources that they may be rejected.

The author's discussion of the origin and relationship of the Canarian fauna and the problem of the origin of island faunas in general is full of food for thought. He endorses the theory that the Canary Islands were never part of the African mainland, their volcanic origin, deep water separation, and absence of terrestrial mammals and reptiles being ample evidence in the negative. The resident birds have therefore been derived from migrants which have been stranded there and remained to breed, and which have eventually become modified by the local environment. In this connection we find that 41 of the 61 resident forms are of northern European affinities and all have closely related races in the British Isles.

The differentiation of races within the Canary group is particularly interesting and as a rule we find one race of a species inhabiting the western group of islands and a different one in the far more arid eastern islands. Here the peculiar desert environment has been active, as it has in producing the pale races of birds in the desert areas of western North America. The distinct races of a few species, which we find inhabiting different islands in the western group, have been attributed by the author to successive invasions of the migrating mainland birds at remote periods, but it seems to us that this supposition is hardly necessary, since birds introduced into two islands simultaneously may select a different sort of food on each island even though the range of choice may be exactly the same, and make other selections which in course of time would be reflected in their color or size. Then too environments which may appear to us precisely similar may have elements of difference that will have a marked effect upon the birds that are brought under their influence. The most interesting of the endemic birds of the Canaries are the two forms of the blue Chaffinch (*Fringilla teydea*) which are found in the pine belts of the high mountains of Tenerife and Gran Canaria, the low grounds of which islands are inhabited by a form of *Fringilla coelebs*. These birds have no close relative anywhere and are probably the oldest species of the endemic avifauna. Mr. Bannerman suggests that an ancestral or allied species might be logically looked for somewhere in the Atlas mountains of northern Africa. It is inconceivable that such strikingly different birds could

have been differentiated on the islands from the *F. coelebs* stock and the only other alternative is that the mainland stock which originally contributed their ancestors to the islands must have become extinct or is now represented by a few lingering individuals in some remote retreat not yet discovered. Space forbids further discussion of the interesting problems touched upon by the author and his paper should be read in its entirety by those who are interested in geographical distribution.

A map and two colored plates, one of the Chaffinches and one of the Titmice, illustrate the paper which is one of the most carefully prepared and philosophic that has recently appeared. The author states in his closing paragraph that "nine-tenths of the value of a collection of birds is to be found in the deductions which we can make from it," and he is to be heartily congratulated upon the excellent way in which he has demonstrated the value of his own collection according to this maxim.—W. S.

Mathews' 'The Bird of Australia.'—The last parts of Mr. Mathews' great work continue the treatment of the Muscicapidae, covering the Australian "Robins," the "Tree Tits," "Fly-eaters," etc. In his systematic consideration of these birds the author follows his usual practice of excessive generic subdivision. In the treatment of subspecies he has improved very decidedly upon the method followed in some of the earlier parts by giving a concise statement of exactly how many races he recognizes under each species. We notice the following new forms described in the present parts, i. e., *Smicrornis brevirostris mallee* (p. 132), Mallee, Victoria, and *Wilsonavis richmondi gouldiana* (p. 143), Gosford, N. S. Wales in Part 2; and *Ethelornis cairnensis robini* (p. 151) Cape York; *E. laevigaster intermissus* (p. 160) Melville Isl., *E. l. perconfusus* (p. 161) So. N. W. Australia, and *E. cantator weatherelli* (p. 164) in Part 3.

Leavitt's 'Bird Study in Elementary Schools.'—Bulletin No. 4 of the National Association of Audubon Societies² consists of a concise summary of such information as the teacher who desires to introduce bird study in some form into the school course, will require. The bulletin is by Dr. Robert G. Leavitt of the New Jersey State Normal School and seems admirably adapted to its purpose. The economic principle of bird protection is outlined as well as the interest, pleasure and moral effect of the study. Practical instructions to the teacher follow, methods of forming Audubon Clubs, school museums, how to attract birds and how and

¹The Birds of Australia by Gregory M. Mathews. Vol. VIII, Part 2. June 17, 1920, pp. 81-144. Part 3, August 18, 1920, pp. 145-184. London, Witherby & Co., 326 High Holborn.

²Bird Study in Elementary Schools. Bulletin No. 4. By Robert G. Leavitt, Ph.D., Head of the Department of Biology, New Jersey State Normal School at Trenton. National Association of Audubon Societies, 1974 Broadway, New York. Price, twenty-five cents. 192 pp. 44.

where to obtain books, pamphlets, and pictures illustrating bird life, etc. There are numerous half-tone illustrations from the Audubon section of 'Bird-Lore'.

As Mr. Pearson states in the foreword, teachers in New York State schools are now required by law to give some instruction in bird-study and it is likely that this will be a wide spread custom before many years pass by. In view of this fact and the extensive voluntary instruction now being given in the schools of the country, this little pamphlet of Dr. Leggett's will be particularly welcome.—W. S.

Hudson's Recent Bird Books.—W. H. Hudson, well known for his writings on Patagonia, has recently published what is essentially a new edition of his 'Birds in a Village,' the first book written after his return to England, in 1893. The present volume bearing the title 'Birds in Town and Village' has been largely rewritten and for portions of the old work which have been discarded, a series of new chapters entitled 'Birds in a Cornish Village' has been added.

The book deals with the familiar British birds and presents an intimate study of most of the species which will prove of value to the ornithologist as a work of reference while the enthusiasm of the writer will maintain the interest of any reader who may have only a slight interest in the "great out of doors." Unfortunately there is no way for one to find again the many interesting facts which he has passed in his reading and to which he may wish to refer, as no index has been provided by the publishers.

Another recent work by the same author is entitled 'Adventures among Birds'² and consists of a miscellaneous series of essays on birds that have appeared in various of the British magazines. Most of them describe tramps through various parts of England and no one who loves walking and nature can read the author's descriptions of his searches for the rarer species of birds and the aspects of the country through which he passed without having his sympathy aroused and wishing that he might follow those same paths.

As in the case of the former volume there are many observations of value scattered all through the pages. There is considerable discussion of bird song and its origin, the author differing with Mr. Witchell who ascribes the resemblances to human music which we recognize in some bird songs to mimetic ability. He considers that the Blackbird's song for instance approaches nearer to our music and that of the Grasshopper Warbler and certain other species to insect music, "simply because it is their nature" to do so. The illustrations to this book are reproductions of the Bewick woodcuts; while those of the former volume are in color

¹ *Birds in Town and Village.* By W. H. Hudson, F.Z.S. With Pictures in Colour by E. J. Detmold, New York. E. P. Dutton & Company, 681 Fifth Avenue, 1920, pp. 1-323. 8 plates.

² *Adventures among Birds.* By W. H. Hudson, New York. E. P. Dutton & Company, 681 Fifth Avenue, 1920, pp. 1-319.

from paintings by E. J. Detmold and are very pleasing in their delicacy although most of them are hardly to be considered seriously as portraits of live birds.—W. S.

'Aves' in the Zoological Record for 1917.¹—Since 1914 the Royal Society of London has been unable to continue the publication of the 'International Catalogue of Scientific Literature' but the Zoological Society has continued to publish the 'Zoological Record' and has recently issued the volume for 1917 which would have been Vol. N, Zoology of the 'International Catalogue.' The titles on Birds have been arranged by Mr. W. L. Sclater, who for several years has edited this subject with commendable devotion and skill. The titles number 707 as compared with 942 for 1916, the falling off of course being due to the war and its many distractions. Nevertheless, under the circumstances the number of papers is remarkable and is nearly 50 per cent. greater than those on all other vertebrates combined, nearly half as many as those relating to insects, and more than those in any group of invertebrates except insects.

As usual the papers are arranged under three main headings, 'Titles', 'Subject Index' and 'Systematic'. In the 'Subject Index' the titles are distributed under seven principal divisions: 'General', 'Structure', 'Physiology', 'Embryology', 'Ethology', 'Variation', and 'Geography'. As might naturally be expected the greater part of the publications are either faunal or systematic. The new generic and subgeneric names number 25, of which twelve were proposed by Mathews, five by Oberholser, two by Todd, and one each by Chapman, Chubb, Kuroda, Murphy, Richmond and A. Roberts, but very few of them affect North America birds. The 'Record' is indispensable to students who wish to keep in touch with current ornithological literature of the world and those who do not have access to the full volume should secure from the publishers a separate of the part relating to 'Aves.'—T. S. P.

Stresemann's 'Avifauna Macedonica'.—A collection of upwards of 3000 skins of birds representing 168 species was made in Macedonia by Dr. F. Doflein and Prof. L. Muller in 1917 and 1918 and deposited in the Zoological Museum at Munich. This collection forms the basis of the present exhaustive report² on the birds of that country by Dr. E. Stresemann.

Under each species there is a complete list of specimens, usually a large series, followed by paragraphs on the sequence of plumages, molts,

¹ Zoological Record, Vol. LIV, 1917, Aves. By W. L. Sclater, M.A., pp. 1-62, December, 1919. Printed for the Zoological Society of London; sold at their House in Regents' Park, London N.W., 8. Price, six shillings.

² Avifauna Macedonica. Die ornithologischen Ergebnisse der Forschungsreisen, unternommen nach Mazedonien durch Prof. Doflein und Prof. L. Muller-Mainz in den Jahren 1917 und 1918, von Dr. Erwin-Stresemann. Mit 6 Tafeln, Munchen 1920 (July). Verlag von Dultz & Co. 8vo., pp. I-XXIV, 1-270. [In German.]

geographic variation, individual variation, distribution and life-history, the last including field notes by Prof. Muller. There are also a bibliography and a historical introduction, an annotated list of Macedonian birds not contained in the collection and finally a nominal list of the 261 species recorded from the country with page references to the main text.

The study of the collection has been carried on with great care and a vast amount of detailed description and measurements is presented. The attention that has been given to the molts and plumages is deserving of especial commendation and it will interest American ornithologists to know that the comprehensive terminology proposed by Dr. Jonathan Dwight in this connection has been largely followed.

The nomenclature is up to date in every respect and includes references to the original description of every species as well as to the subspecies where it does not happen to be the "typical" race.

We notice only two new names proposed by the author: *Galerida cristata mühle* (p. 62) for *Alauda ferruginea* Mühle 1844 (nec *A. ferruginea* Smith 1830); and *Budytes flavus macronyx* (p. 76), a new form from Vladivostok allied to *B. f. thunbergi*.

There are eight excellent views of Macedonia reproduced in half-tone and a number of diagrams showing variation in wing length in various species.

Dr. Stresemann is to be congratulated upon producing a report that is a model of its kind and in providing us with a thoroughly up to date work of reference upon the avifauna of a country about which we knew but little.—W. S.

Wood on the Eyes of the Burrowing Owl.—Dr. Casey A. Wood has published a valuable paper on the eyes of the Burrowing Owl¹ with a full technical description of their structure compared with that of other owls and a plate of the fundus oculi.

His conclusions are of especial interest to ornithologists. He says: "In spite of the fact that Bendire and Hudson refer to the animal as a diurnal owl, their accounts of its habits really bear out the writer's contention of a nocturnal animal with fairly good day vision, yet distinctly embarrassed, uncertain, and confused when the eyes are exposed to bright sunlight. Stress is laid by a number of observers upon the fact that this owl is seen at all times of day standing guard often on a little mound of earth in front of his burrow entrance, forgetting that as a much more interested householder, he also watches from the same post all hours of the night." Dr. Wood finds the eye structure similar in every respect to that of nocturnal animals.

¹ The Eyes of the Burrowing Owl with Special Reference to the Fundus Oculi. By Casey A. Wood, M.D., Chicago, Ill. Reprinted from Contributions to Medical and Biological Research. Dedicated to Sir William Osler, in Honor of his Seventieth Birthday, July 12, 1919, by his Pupils and Co-Workers. 8vo., pp. 819-823.

Other owls as is well known spend the day at rest on some suitable perch and it is probably only the exposed habitat of this species that makes it more conspicuous at this time and invites the assumption that it is diurnal in habits. The ease with which we make unauthorized assumptions may be seen at another point in Dr. Wood's paper where following the majority of writers he says that these owls mate "probably for life" whereas Mr. Baldwin's investigations on bird breeding (cf. Auk, 1920 p.) seem to show that we have no warrant for any such assumption.

Dr. Wood's paper is most welcome as we need just such special investigation into the various organs of birds before we can hope for a proper understanding of their systematic relationships.—W. S.

Murphy on the Seacoast and Islands of Peru.—Mr. Robert Cushman Murphy has published two papers¹ descriptive of his recent trip to the Peruvian seacoast which give one an interesting account of this country and its physical features. Of especial interest to the zoologist is his discussion of the ocean currents and their effect upon the distribution of life on the Pacific coast of America. Many sketch maps show clearly how cold currents, following the coast as far south as Cape San Lucas, carry boreal types southward and how similar currents flowing northward bring antarctic types as far as northern Peru, while warm ocean streams on the west coast of Mexico, Central America and northern South America delimit the range of the tropical life found on the shores of this area. The uniformity of surface temperature on the Peruvian coast as compared with the western Atlantic and the percentage of salinity are discussed with reference to their effect upon animal life, while the climate of Lima is graphically described as well as the faunal zones of Peru dependent, as has been shown by Dr. Chapman in the case of Colombia farther north, upon winds and cloud banks quite as much as upon elevation.

Mr. Murphy's papers should be read by everyone interested in South America and its fauna as well as by students of geographical distribution, who will find in this southern continent factors which are entirely absent in North America and which are quite novel to one trained to explain everything by circumpolar temperature zones and peculiarities of local environment.—W. S.

Dr. Shufeldt's Bibliography.—The seventh and eighth installments of Dr. Shufeldt's bibliography² have appeared which bring the list down to 1918, while the introductory pages contain much biographical matter.—W. S.

¹ The Seacoast and Islands of Peru. By Robert Cushman Murphy. Parts I and II. The Brooklyn Museum Quarterly, January and April, 1920.

² Complete List of My Published Writings with Brief Biographical Notes. By R. W. Shufeldt, Medical Review of Reviews, July and August, 1920, pp. 368-377 and 437-447.

Birds of the National Parks.¹—Two years ago in referring to the Circulars of Information of the National Parks (*The Auk*, XXXV, p. 493, 1918), attention was called to the need of lists of the birds of Crater Lake, Mt. Rainier, Rocky Mountain, and Yosemite. Lists for the last two parks have now been supplied. In the Rules and Regulations for 1920 bird lists are included in the circulars for Rocky Mountain, Sequoia, Yellowstone, and Yosemite, and notes on twelve characteristic birds in that for Mt. Rainier. The Glacier Park list is no longer published in the circular but forms part of the special bulletin on 'Wild Animals of Glacier Park', 1918 (See *The Auk*, XXXVI, p. 434, 1919).

Through an unfortunate oversight the names of the authors of the Rocky Mountain and Yellowstone lists have been omitted and consequently the notes lose much of the authority which they should have when reduced to the category of brief lists in anonymous official publications in which it is impossible to ascertain the responsibility for the statements. It is evident however that Dean Babcock is the author of the list for the Rocky Mountain Park, and M. P. Skinner of that for the Yellowstone. The last mentioned list contains 200 species as compared with 194 in 1918 while the Sequoia list includes only 168 as compared with 182 two years ago. It is much to be desired that the notes in the anonymous lists should be made at least as full as those in the Yosemite list by Grinnell and Storer. Bird lists for Crater Lake, Grand Canyon, Lafayette, Mt. Rainier and Wind Cave National Parks, and also for the Muir Woods National Monument are still greatly needed.—T. S. P.

Game Laws for 1920.—The United States Department of Agriculture has issued the usual summary of the Federal, State and Provincial game laws as *Farmers' Bulletin 1138*², the compilation being the work of George A. Lawyer and Frank L. Earnshaw of the Biological Survey. The plan follows that of previous years. First is given a synopsis of the open seasons in the various States and Territories and the Provinces of Canada followed by a summary of the new legislation passed during the year.

The wide circulation of the information in this pamphlet will do more to save wild bird life than anything else and we trust that all who receive the pamphlet will follow the request on the inside of the cover and "show the bulletin to a neighbor."

¹ Rules and Regulations, Mount Rainier National Park (birds pp. 13-17); *Ibid.* Rocky Mountain National Park (birds pp. 30-36); *Ibid.* Sequoia and General Grant National Parks (birds pp. 26-31); *Ibid.* Yellowstone National Park (birds pp. 80-90); *Ibid.* Yosemite National Park (birds pp. 50-54). National Park Service, Dept. of the Interior, 1920. Free on application to the Director of the National Park Service, Washington, D. C.

² Game Laws for 1920. *Farmers' Bulletin 1138*, U. S. Department of Agriculture. A summary of the Provision of Federal, State and Provincial Statutes. pp. 1-84 To be had on application to the Division of Publications, U. S. Dept. of Agriculture.

Why cannot every member of the A. O. U. post himself on the laws as they affect the birds of his state and make it his business to converse with as many gunners as possible and let them know in the course of conversation that he is informed on the law and is on the lookout for violators? In the case of boys or ignorant gunners actually engaged in illegal shooting or preparing to do so, the law and the penalties could be forcibly explained. Educational work of this sort carried on with a little tact will do a world of good and exemplify once more the old adage that an ounce of prevention is worth a pound of cure.—W. S.

Peters on a New Jay.—In this short paper¹ Mr. Peters describes as new the form of the Canada Jay occurring at Red Deer, Alberta, calling it *Perisoreus canadensis albescens* (p. 5). The specimens examined are in the Brewster collection, now in the Museum of Comparative Zoology, and are paler than any of the other known races.—W. S.

Chapman on *Ostinops decumanus*.²—As a result of a study of a large series of this Cacique Dr. Chapman separates the birds from Bolivia, Peru and south-western Brazil from the typical form of northern South America, as *Ostinops decumanus maculosus* (p. 26) Yungus, Bolivia, characterized by a sprinkling of yellow or white feathers over the body and wing-coverts. The most important part of his paper however is the careful study of variation which it contains. The author finds variation of several kinds represented in this species the most striking being in the shape and size of the wings and tail in male birds from the same locality, which he attributes partly to age and partly to other factors. Dr. Chapman's paper should be carefully studied by anyone contemplating further subdivision of this or allied species while it is also an important contribution to the problem of variation in general.—W. S.

Lonnberg on 'The Birds of the Juan Fernandez and Easter Islands.'³—The material upon which this paper is based was procured on the Swedish Pacific Expedition of 1916-17 by Mr. Kare Backström, zoologist of the party. From the Juan Fernandez specimens of twenty species were obtained which are described in detail by the author, the *Cinclodes* hitherto regarded as *C. fuscus* being separated under the name *C. oustaleti baekstroemii* (p. 4). The interesting hummingbird, *Eustephanus fernandensis* was taken in various stages of molt, some indi-

¹ A New Jay from Alberta. By James Lee Peters. Proc. New England Zool. Club, VII, pp. 51-5. May 4, 1920.

² Unusual Types of Apparent Geographic Variation in Color and of Individual Variation in Size Exhibited by *Ostinops decumanus*. By Frank M. Chapman. Proc. Biol. Society of Washington, Vol. 33, pp. 25-32. July 24, 1920.

³ The Birds of the Juan Fernandez Islands.

Notes on Birds from Easter Island. By Einar Lonnberg, pp. 1-24. Extract from The Natural History of Juan Fernandez and Easter Island. Edited by Dr. Carl Skottsberg. Vol. III. 1920. [In English.]

viduals having scarcely a metallic feather and it is suggested that the so-called *E. leyboldii* is merely a seasonal condition of *E. fernandensis*. Half-tone illustrations of the latter bird and nest from photographs are presented.

A summary of our knowledge of the avifauna of these historic islands shows that thirty species are known to have occurred on them. Of these twenty-four have been recorded from Masatierra and twelve from Masafuera. Nine species are indigenous, the two humming birds, the *Anaeretes* and the Sparrow Hawk being peculiar to the former island and the *Aphrastura* and buzzard to Masafuera, although stragglers of the latter species wander across to Masatierra. The thrush and the *Cinclodes* occur on both islands. Five petrels breed on the islands and the Domestic Pigeon and California Quail have been introduced. The other birds are accidental visitors, five from the South American mainland, five roving seabirds and three migrants from the north—the Short-eared Owl, Red Phalarope and *Buteo obsoletus*.

On Easter Island specimens of six of the twelve species said to inhabit the island were obtained, two of which are described as new: *Procelsterna caerulea skottsbergii* (p. 20) and *Pterodroma heraldica paschae* (p. 23). The nesting habits of the latter species are interesting. The soil of the island where this Petrel breeds was so hard that it was impossible for the birds to construct burrows and the eggs were therefore laid directly upon the ground amongst the grass.—W. S.

Geographical Bibliography of British Ornithology.—Part 5 of this valuable reference work¹ continues the Scottish counties and includes the island groups—the Orkneys, Hebrides and Shetlands, the ornithology of which is perhaps the most interesting of any part of the British Isles. One of the works containing reference to the birds of the Orkneys bears date of 1693, while the bibliography of the birds of the Hebrides runs back to 1703. Part 6 covers Ireland and brings the work to a close.—W. S.

Spring Migration Notes of the Chicago Area.—In an attractively printed pamphlet² bearing this title Messrs. J. D. Watson, G. P. Lewis and N. F. Leopold, Jr., have presented an annotated list of the birds observed by themselves and by Messrs. Locke Mackenzie and Sydney Stein in the Chicago Area with dates of arrival for the years 1913 to 1920 inclusive. The main list contains 237 species with five others, the occurrence of which is doubtful. The list seems to be very carefully prepared

¹ Geographical Bibliography of British Ornithology from the earliest Times to the end of 1918 Arranged under Counties. By W. H. Mullens, H. Kirke Swann and Rev. F. R. C. Jourdain. Part 5, pp. 385–480 Part 6, pp. 481–558. Witherby & Co, 326 High Holborn, London. 1920.

² Spring Migration Notes of the Chicago Area. Compiled by James D. Watson, George Porter Lewis and Nathan F. Leopold, Jr. Privately printed. pp. 1–18. [1920.]

and should be of much interest to other bird students of the district, while it will also furnish a convenient comparative record for those interested in the general study of bird migration.—W. S.

Nomenclature of the Birds of Bavaria.—In 1916 appeared a list of the birds of Bavaria¹ by C. E. Hellmayr and A. Laubmann, published under the authority of the Ornithological Society of Bavaria. It comprises the list proper of 326 species and subspecies and a hypothetical list of 14 additional forms, together with a list of the genera with the type species and the method of their determination.

In the list the species are arranged systematically under the families with a reference to the original place of publication and the type locality. It is interesting in connection with our efforts toward uniformity in nomenclature to compare this list with that of British birds prepared in 1912 by Dr. Hartert and others (for comparison of this with the A. O. U. List and with the subsequent List of British Birds by the B. O. U. Committee. See 'The Auk' 1912, p. 407). We find that there appear to be only thirty cases where the lists differ either in generic or specific names and half of these are due to the lumping of genera in the British 'List' which are usually regarded as distinct, other differences are due to the unfortunate obscurity of the International Code as to whether one name precludes the use of another if it is spelled in a slightly different manner, i. e. the "one letter rule".

The general concordance of the two lists is certainly very encouraging and it would seem that a nomenclature could soon be drawn up for Europe and North America with a few concessions on either side, that would be universally acceptable.

One point in the Hellmayr-Laubmann List upon which the opinion of the present reviewer is referred to deserves further consideration, namely the fixing of the type of the genus *Colymbus* Linn. by Gray in 1855. In my remarks (Auk, 1913, p. 458) I did not realize that the edition of Linnaeus to which he referred was prior to the starting point of zoological nomenclature and we have no right to interpret "Linnaeus 1735" as "Linnaeus 1758." I am therefore of opinion that no type was legitimately selected for the genus until Baird, Brewer and Ridgway cited *C. cristatus* in the second volume of the 'Water Birds of North America' p. 425 in 1884. This reference is given by Hellmayr and Laubmann and is perfectly correct antedating the action of the A. O. U. Committee in 1886 which is given as the first selection of type in the A. O. U. 'Check-List.' The name *Colymbus* must therefore remain for the Grebes.—W. S.

¹ Nomenclator der Vogel Bayerns. von C. E. Hellmayr und A. Laubmann Im Auftrage der Ornithologischen Gesellschaft in Bayern herausgegeben von C. E. Hellmayr. Munchen May 30, 1916. pp. 1-68. [In German.]

Van Cleave's "Acanthocephala of the Canadian Arctic Expedition, 1913-1918."¹—In his paper Dr. Van Cleave states that so far as he is aware there are no published records of the occurrence of Acanthocephala in the arctic fauna of North America. "Species described by some of the early explorers have become the objects of much conjecture on the part of present-day investigators. Under the name *Sipunculus lendix*, Phipps (1774) described from an Eider Duck what is obviously a species of Acanthocephala. Soon afterward, Goeza (1782: 141) called attention to the fact that this species of Phipps is in reality an acanthocephalan. Since that time various investigators have endeavored to determine the correct disposition of this species within the group, but all of their attempts appear to be mere guesses ostensibly fostered by the desire to distribute all of the species names into groups which would at least give the appearance of a completely worked out synonymy. . . .

"Three species of fresh-water fishes, two marine fishes, and one bird constitute the entire list of acanthocephalan hosts recorded by the expedition. . . . A new species of the genus *Filicollis* [*Filicollis arcticus* Van Cleave, type host, King Eider, *Somateria spectabilis* (Linnaeus), in intestine, collected at Bernard harbour, Dolphin and Union strait, Northwest Territories, June 16, 1916; cotypes deposited in the Victoria Memorial Museum, Ottawa, Canada, and in the collection of the author at Urbana, Illinois] from the King Eider stands intermediate between the European and the North American species of this genus, but in some respects shows much closer relationship with the previously described American species. . . . A comparison of *F. arcticus* with other known members of the same genus discloses some interesting facts regarding the geographical distribution of the members of this genus. *F. anatis* is the common European representative of *Filicollis* while *F. botulus* occurs in the Eiders in the United States. *Filicollis arcticus*, n. sp., differs in definite manner from both the previously mentioned species but shows a distinctly closer relationship to *F. botulus*. . . . In *F. botulus* there are but sixteen longitudinal rows of hooks (on the proboscis) while for *F. arcticus* the writer has found twenty-two. Both of these American species lack the spherical enlargement of the proboscis characteristic of the European species.

"The King Eider, the host of *F. arcticus*, though circumpolar in its distribution, evidently does not carry the same acanthocephalan infestation throughout its range. From the West Tajmirland peninsula, von Linstow (1905: 3). [Helminthen der Russischen Polar-Expedition 1900-1903. Mem. Acad. Imp. Sc. St. Petersbourg, Serie 8, Class Physico-Math., 18: 1-17] described *Echinorhynchus pupa* from this same host

¹ Report of the Canadian Arctic Expedition, 1913-18, Vol. IX: Annelids, Parasitic Worms, Protozoans, etc. Part E: Acanthocephala. By H. J. Van Cleave. Southern Party—1913-16. Ottawa: J. de Labroquerie Tache, Printer to the King's Most Excellent Majesty. 1920. Issued April 7, 1920. pp. 1-11C.

species. Unfortunately his description and his figures of this species fail to give a full enough account of the structure to enable anyone to place it with certainty in any of the genera recognized in modern taxonomy of the Acanthocephala. . . . No evidence is presented, either in his description or in his figure, which would make it seem probable that his species belongs to the genus *Filicollis*. Thus on opposite sides of the arctic circle the King Eider apparently is parasitized by Acanthocephala representing two distinct genera."—R. M. A.

Economic Ornithology in Recent Entomological Publications.—

A few recent entomological contributions contain noteworthy references to bird enemies; they relate to the following insects:

Round-headed apple-tree borer (*Saperda candida*): Losses from this insect have increased with the development of apple growing, and at present the species is a primary pest throughout the region east of the Rocky Mountains. Mr. Fred E. Brooks, author of a comprehensive bulletin¹ on this borer says: "Probably no other economic insect of equal importance has had so few natural enemies recorded definitely and specifically as has the round-headed apple-tree borer," and that personally he has never found any evidence of hymenopterous parasites. However, he goes on to say that:

"While the control effect of parasites and predacious insects on this borer is negligible, woodpeckers play an important part in holding it in check. Wherever the writer has collected specimens or made observations in borer-infested localities the work of these birds has always been in evidence. Soon after the borers hatch the woodpeckers begin to find them beneath the thin covering of bark and thereafter the birds drill for them as long as they are in the tree. In several orchards where counts were made from 50 to 75 per cent of the borers had been destroyed in this way.

"During October, 1915, 24 young borers were collected and planted in furrows gouged out of the wood beneath loosened tongues of bark on the trunk of an apple tree. A week later, when the tree was revisited for the purpose of putting a wire screen around the trunk to protect the borers from birds, woodpeckers had punctured every tongue of bark and removed the borers from beneath. Not one had escaped. In May of the same year, while pupae were being collected from an orchard, a total of 11 pupal cells were found and from every one the occupant had been removed by woodpeckers. In another case 21 pupal cells were found, 19 of which had been opened by woodpeckers and the insects removed." (pp. 29-30.)

Ribbed pine-borer (*Rhagium lineatum*): While not a serious insect pest, this species materially hastens the death and decay of injured pines. A

¹ Bul. 847, U. S. Dept. Agr. 1920.

recent writer on the subject notes¹ that: "Birds, chiefly the woodpeckers, are the most important of the predatory enemies. It is not uncommon to find infested trees where these birds have removed from one-half to two-thirds of the larvae and adults during a single winter."

Semitropical Army Worm (*Xylomyges eridania*): This insect has developed into a serious enemy of agriculture in Florida within the last few years and although complete studies of its habits and enemies have not yet been made, it has been learned that birds including the Bobwhite, Boat-tailed Grackle, Meadowlark, Bobolink and Loggerhead Shrike feed upon it to a very noticeable extent.²

Earwig (*Forficula auricularia*): This species which has been introduced into Rhode Island where it has become numerous, spread and done considerable damage is treated in an article by an English author who has collected³ the records of its capture by British wild birds. Summing them up he finds that 13 species of birds are known to have captured earwigs, most of them sparingly. Similarly there are only a few records of American birds eating these insects but in considering such cases there should be kept in mind the proportion these small groups bear to all of the food available to birds. The earwigs are a very insignificant part of the insect fauna of either England or the United States and no surprise should be felt, therefore, that they are not more often eaten by birds.—W. L. M.

The Bird Interest in Iowa Lakes.—A report valuable not only for its findings and recommendations, but especially as a voucher of deep public interest in the subject, is that upon Iowa Lakes and Lake Beds by the State Highway Commission. (250 pp. 1917.) In the first place it is most encouraging to note that in nine-tenths or more of the cases retention and improvement of the lakes is recommended. The Commission has wisely resisted clamor by drainage advocates and considering the rights of the entire public has in consequence adopted a policy of conservation. In nearly every case, the report states, in which the drainage of a lake has been petitioned, the great damage caused to crops by blackbirds which congregate in the vicinity of the lake has been set forth as one of the principal reasons why drainage was desired. A careful field investigation of these depredations was made by the State Agricultural Experiment Station and the following conclusions reached: (1) Slight damage is done to sprouting corn and that in very limited areas near nesting colonies of birds; (2) Damage to small grains is confined to the season they are in shock, is serious only when the shocks are left exposed a long time, and is restricted to small areas near groves, sloughs

¹ Hess, Walter N., Mem. 33, Cornell Univ. Agr. Exp. Sta., May, 1920, p. 379.

² Berger, E. W. Quart. Bul. State Plant Bd. Fla., Vol. 4, No. 2, Jan. 1920 pp. 27-28.

³ Brindley, H. H., Proc. Cambridge Phil. Soc., Vol. 19, 1918, pp. 175-177.

or patches of sunflowers. Within territory one mile from a lake this damage does not average more than one dollar per acre; (3) The amount of damage done to corn in the milk varies as the distance of the field from a lake, slough or grove. On farms within half of a mile of a lake about 13 per cent. of the ears were damaged, on farms from a half mile to two miles distant, 5 per cent, and on those more than two miles about one and a half per cent. The average loss on farms of the first group is about four cents per acre. The greatest damage per acre disclosed by the survey was \$17.00, and this in only one instance. Accompanying the report on field investigation is one on the contents of the stomach of 43 Red-winged and 16 Yellow-headed Blackbirds from analyses made by the Biological Survey. Twenty-six per cent of the food of the former birds and 2.7% of the latter consisted of corn. In summing up the relations of lakes, bird pests and the public it appears highly preferable that direct control measures be applied to the injurious species rather than that the lakes be drained, for the latter are not only of great value as recreation places, but also are the center of abundance of numerous species of wild birds, including valuable game birds entirely dependent upon the presence of the lakes.

In general the report reviewed gives proper weight to the hunting interests, but the suggestion is repeated in many places that water-levels must be raised to discourage dense growths of water lilies, of cat-tails, rushes and of marsh as a whole. In this connection it should be kept in mind that marsh is absolutely necessary for practically all the birds which are attracted by the lakes. It is their breeding home and no matter how desirable it may be to boating or fishing interests to have more deep, clear water, the marsh must not be sacrificed or the whole value of lake conservation from the wild life standpoint will be lost.

The report includes a useful report on the vegetation of the lakes, from which a clear idea as to their wildfowl food resources can be drawn. This part of the report is unexceptionable except for insistence on the point just alluded to, namely suppression of marsh. If the demands for recreation places cannot be compromised with the necessities of wild life, it would seem necessary to assign the lakes definitely to the one purpose or the other and treat them accordingly. While saving lakes from drainage is a conservation measure, wild life will suffer practically as much from elimination of marshes as it would from drainage. In view of the advanced attitude it has already taken on the subject of lake conservation there would seem little doubt but that the State Commission will give full weight to the interests of wild life when properly presented.—W. L. M.

Bird Liming in Lower Egypt.—An interesting paper¹ with this title is here somewhat belatedly reviewed and occasion taken to present

¹ Ministry of Public Works, Zoological Service Publ. No. 28, 1919, 9 pp.

a short list of articles on bird lime, a subject concerning which information is not always easily found. The paper reviewed is by John Lewis Bonhote and has an introduction on the need for protection of birds in Egypt by Major S. S. Flower, both members of the British Ornithologists' Union. Bird liming has been carried on in Egypt for an indefinite period with no attempts at restriction until 1912. The localities where the practice is profitable are limited, being open country on the far side of bodies of water in the paths of bird migrants. Here bushes are set up which are very attractive to the birds as furnishing perches and promising food, and in these the limed rods are placed, or V-shaped flyways are constructed in tall marsh vegetation with limed sticks at the apex. When the bird catchers are undisturbed they get large numbers of birds ranging in size up to rollers and turtle doves. The lime is made from pulp of the fruit of *Cordia mixta*. On account of cruelty connected with the practice of bird-liming, the fact that most of the birds captured are beneficial, and the illegality of the whole traffic, strenuous efforts have been made to break it up.

The following references to information on bird lime and its use are submitted. Treatments in encyclopedias are not included, but it is worth mentioning that the principal works of this class contain a fair amount of information on the subject.

Abbey, George. The Balance of Nature and Modern Conditions of Cultivation, 1909, pp. 188-190.

Anon. Bird-Lime Manufacture in Japan. Chicago Field, Vol. 8, No. 16, Dec. 1, 1877, p. 265.

C., T. Bird-lime. American Sportsman, Vol. 4, No. 16, July 18, 1874, p. 253.

Carnegie, W. Practical Trapping of Vermin and Birds. Third Ed. pp. 62-65.

Driberg, C. Field Rats in Cultivated Land. The Tropical Agriculturist (Ceylon) Vol. 25, 1906, pp. 875-6.

Phillips, Coleman. Small Bird Nuisance. Conference of New Zealand Fruitgrowers, etc. Dunedin, June 1901. N. Z. Dept. Agr. p. 37.

The various substances reported to be used in the manufacture of bird-lime include; inner bark of European holly and of the mochi tree of Japan, presumably the whole plants of mistletoe and distaff thistle, fruits of the genus *Cordia*, wheat flour, linseed and fish oils and Venice turpentine.—W. L. M.

The Ornithological Journals

Bird-Lore. XXII, No. 4. July-August, 1920.

Photography of the Scarlet Tanager. By C. W. Leister.—An admirable series of pictures of a very difficult subject.

A Gnatcatcher's Troubles. By R. D. Book—Account of its nest building in Ohio.

A Curious Nesting Habit of the Tufted Titmouse. By James P. Baker, Jr.—Collecting hairs from a man's head as well as from a dog and a squirrel. The taking of hairs from a live squirrel has been previously described in 'The Auk' for 1897, p. 325.

The Starling and the Bobolink are the species whose migration and plumage are discussed in this issue and form the subject of a color plate by Fuertes.

In the Audubon and School Departments is an excellent article on the study of birds' eggs by Dr. Arthur A. Allen and an account of a visit to some of the bird refuges of North Carolina, Louisiana and Texas, by T. Gilbert Pearson.

The Condor. XXII, No. 3. May-June, 1920.

The Home Life of the Western Warbling Vireo. By Henry J. Rust.—An admirable account of the nest building and rearing of the young of this species in northern Idaho, well illustrated.

Autobiographical Notes. By Henry W. Henshaw.—This instalment brings to a close this notable autobiography which we hope may be instrumental in bringing others of our older ornithologists to record their recollections in the same delightful way that Mr. Henshaw has done, before it is too late. It really seems to us a duty that they owe to American ornithology, the record of the development of which can be preserved in no other way.

The Existence of Sea Birds a Relatively Safe One. By Joseph Grinnell.

A Return to the Dakota Lake Region. By Florence M. Bailey (concluded).

The Condor. XXII, No. 4. July-August, 1920.

In Memoriam: Frank Slater Daggett. By Harry S. Swarth.

Variations in the Song of the Golden-crowned Sparrow. By Frank N. Bassett.—In musical notation carefully tested with a pitch-pipe.

Additional Notes on the Avifauna of Forrester Island, Alaska. By George Willett.

Observations on the Habits of the White-winged Dove. By Alexander Wetmore.—A valuable report on the habits and economic status of the species based upon field observations conducted under the auspices of the Biological Survey.

A New Ptarmigan from Mount Rainier. By Walter P. Taylor.—*Lagopus leucurus rainierensis* (p. 146), Mount Rainier, Washington.

The California Race of the Brewer Blackbird. By J. Grinnell.—*Euphagus cyanocephalus minusculus* (p. 153), Palo Alto, California.

The Oologist. XXXVII, No. 6. June, 1920.

Annotated List of the Birds of Brooke County, W. Va. Part II. By G. M. Sutton, Part III in July issue.

The Oologist. XXXVII, No. 8. August, 1920.

Days with the Cerulean Warbler. By S. S. Dickey.—Account of its breeding in southwestern Pennsylvania with detailed description of eight nests.

North Dakota Birds of Coulee and Moraine. By P. B. Peabody.

The Ibis. (II Series.) II, No. 3. July, 1920.

List of the Birds of the Canary Islands, with detailed references to the Migratory Species and the Accidental Visitors. By David A. Bannerman. Part VII. Summary and General Conclusions. (See antea p. 607.)

A Nominal List of the Birds of Siam. By Count Nils Gyldenstolpe. (continued).

Notes on South African Accipitres. By C. G. Finch-Davies (concluded).—*Tinnunculus rupicolus rhodesi* (p. 620), Matope Hills, Rhodesia.

Notes on the Birds of North-east Chihli, in North China. By J. D. D. LaTouche.

Some Observations on the Birds of Islands of Milos, Lemnos and Imbros, Aegean Sea. By J. H. Stenhouse.

On Some West Australian Birds collected between the North-West Cape and Albany (950 miles apart). By Thomas Carter With Nomenclature and Remarks by G. M. Mathews.

On a Doubling of the Central Tail-feathers in a Bird-of-Paradise. By J. A. Bierens de Haan.

Bulletin of the British Ornithologists' Club. No. CCLI. May 31, 1920.

Lord Rothschild exhibited a life size restoration of the Moa, *Dinornis maximus*, and exhibited a specimen of his *Ifrita coronata* from New Guinea which proves identical with *Todopsis kowaldi* deVis. He demonstrated that the bird had no close relation with *Todopsis* and that it must therefore be called *Ifrita kowaldi*.

Mr. P. A. Buxton presented a revision of the Persian races of *Sitta rupicola* and *S. neumayer*.

Dr. Hartert described a new woodpecker, *Campethera loveridgei* (p. 139) from Morogoro, East Africa.

Mr. C. W. Mackworth-Praed described five new races of African Francolins and Mr. N. B. Kinnear, a new nuthatch from Mt. Victoria, Burma.—*Sitta europaea griseiventris* (p. 142).

Bulletin of the British Ornithologists' Club. No. CCLII. June 30, 1920.

A number of rare books and pictures were exhibited which are listed.

Dr. Ticehurst described the Egret Farms of Sind about which he had gathered much information, but Mr. Stuart Baker said that the number of plumes obtained from this source was infinitesimal as compared with those from killed birds.

Mr. Charles Chubb described: *Atticora fucata reraimae* (p. 155) from Mt. Roraima, British Guiana; and *Henicorhina leucosticta haurxwelli* (p. 156) from Elvira, east Peru.

Dr. Ticehurst described *Crateropus terricolor sindianus* (p. 156) from Karachi, Sind, and *Prinia flaviventris sindianus* (p. 157) from Sukker, Sind.

British Birds. XIV, No. 1. June, 1920.

Notes on Slavonian Grebe. By A. D. DuBois.—Reprinted from 'The Auk' XXXVI.

Manx Ornithological Notes. By P. G. Ralph.

Notes on the Harlequin Duck. By Charles E. Alford.—On the coasts of British Columbia.

British Birds. XIV, No. 2. July, 1920.

Notes on Somersetshire Ravens. By Stanley Lewis.—Detailed observations at a nest site on the cliffs of Cheddar.

British Birds. XIV, No. 3. August, 1920.

Bird Tracks in the Snow. By Richard Clapham.—With interesting photographs.

Notes on a Pair of Bee-eaters in Scotland. By J. Kirke Nash.—The pair actually started nesting when the female was caught by a local gardener and died in captivity.

Avicultural Magazine. (III Series) XI, No. 6. June, 1920.

Birds of Paradise in Captivity. By A. S. LeSouef.—Six species in the Zoological Park at Sydney, Australia.

Avicultural Magazine. (III series) XI, No. 7. July, 1920.

The Nesting of the Pilot Bird (*Pycnopsilus floccosus*). By S. A. Lawrence and R. T. Littlejohns.—In Victoria.

Avicultural Magazine. (III Series) XI, No. 8. August, 1920.

Buff-backed Herons. By J. L. Bonhote.—On Herons in captivity in Egypt.

The Emu. XIX. Part 4. April, 1920.

The Rufous Scrub-Bird. (*Atrichornis rufescens*) in Queensland. A New Subspecies. By H. L. White.—*A. r. jacksoni* (p. 258), Macpherson Range.

Haunts of the Rufous Scrub-Bird (*Atrichornis rufescens* Ramsey)—Discovery of the female on the Macpherson Range, S. E. Queensland. By S. W. Jackson.—This article is a detailed account of the search for the bird described in the preceding paper, but curiously enough the new name is not employed in the title of either which is to say the least confusing. No matter what races of the bird may be recognized Mr. Jackson has presented a most valuable contribution to our knowledge of this rare type and has illustrated it with some excellent pictures of its wonderful environment. There are interesting accounts of other species met with on the trip.

New Sub-species of *Pachycephala olivacea*. By H. L. White.—*P. o. macphersonianus* (p. 273), Macpherson Range, Queensland.

Field Notes on the Painted Honey-eater. (*Entomophila picta*.) By J. S. P. Ramsey.

The Tasmanian and New Zealand Groups. By Robert Hall.—A rather elaborate discussion of the faunae of these islands and comparison with that of the Australian-Papuan region.

Wilson's Promontory (Victoria) and its Wild Life. By Charles Barrett.—This region comprising approximately 100,000 acres is now a National Park carefully guarded by competent rangers. A list of the birds so far recorded from it is appended.

Birds of the Mount Compass District, South Australia. By Edwin Ashby.

Notes on Parasitism. By H. Stuart Dove.

Colour-Sense in Satin Bower-Birds. By H. V. Edwards.—Seem to show a marked preference for blue objects when gathering materials for their bower.

Variation in the Albatrosses and Petrels. By Leverett M. Loomis.—Consists mainly of a rewriting of matter already published in 'The Auk', one of the illustrations having already appeared there although the fact is not mentioned.

In 'Camera Craft Notes' there are several interesting photographic reproductions including one of a young Little Penguin.

The Austral Avian Record. IV, No. 1. May 27, 1920.

Dates of Ornithological Works. By G. M. Mathews.—This is a condensed reprint of the author's valuable article in his Appendix to the 'Birds of Australia', which is now rendered available to all.

The Austral Avian Record. Vol. IV, No. 2 and 3. July 28, 1920.

Avian Taxonomy. By G. M. Mathews and Tom Iredale.—This paper consists mainly of a scheme of classification of the birds of the world running down to families. The authors give no reasons for their departure from current systems where they differ from these, though as a matter of fact there does not seem to be much that is original in their scheme, except in the rank which they give to different groups. One is rather surprised to see the list bristling with "suborders" and "super-families" when they refuse to make use of "subgenera" which, in the opinion of many, would so adequately express their ideas on the proper grouping of species without completely upsetting our nomenclature. The authors are not always very clear in the wording of their introductory pages, but they seem to have an ill-concealed contempt for the anatomist, especially if he be not an ornithologist, as they say: "A complication has been present in the peculiar usurpation of recent taxonomies by individuals ignorant of avian forms. We have been quite unable to appreciate the reasons for acquiescence in the unmerited dogmatism of such writers, whose inability to understand avian evolution has been disguised by the usage of barbaric terms." Following this comes the astonishing statement that "only three taxonomists have dealt with bird classification in a scientific manner, viz., Stejneger, Sharpe and Shufeldt, and these were more or less confused by the peculiarities proposed by their predecessors, and could not deal clearly with the matters in view." With all due respect and admiration for the three gentlemen mentioned we can hardly accept this statement of Messrs. Mathews and Iredale and

we think that the chosen three would be the last to ignore the labors of the illustrious group who have been denied admission to this inner circle.

Systematic ornithology so far as it is concerned with the separation of species and geographic races and the scouring the literature for the names that have been bestowed upon them is one thing; but the working out of the evolution of the general groups and their proper relationship is quite another. One is as important as the other, but each requires a man trained in that particular field and to obtain the most reliable facts in the second line of research we must of necessity look for help to the zoologist whose knowledge extends beyond the limits of the Aves.

The same authors have a "name-list" of the birds of New Zealand and the first instalment of a similar list for those of Australia, which complete this issue of the Record.

The South Australian Ornithologist. V, Part 2. April, 1920.

The Birds of Rivers Murray and Darling and district of Wentworth. By A. Chenery and A. M. Morgan.

Some Weights and Temperatures of Birds. By A. M. Morgan.

Eudromias australis. The Australian Dottrel. By J. McNeil Gilp.

Revue Francaise d'Ornithologie. No. 133. May, 1920. [In French.]

Contribution to a Study of the forms of *Bubo ascalaphus* in North Africa. By L. Lavauden.

Revue Francaise d'Ornithologie. No. 134. June, 1920.

An Amateur Bird Guide for One Visiting Africa. By Dr. Millet-Horsin. (Continued in the two following numbers.)

Revue Francaise d'Ornithologie. No. 136. August-September, 1920.

A New Subspecies of *Accentor* from France.—A Reprint of Harper's article on *Prunella modularis mabbotti*.

Birds Observed in Tunis, May 8-June 8, 1920. By M. Morgue.

Destruction and Reaction. By Rene Deschiens.—Killing of Terns and Gulls as "Game" and the need of a revision of the legal term.

L'Oiseau. I, No. 6. June, 1920. [In French.]

The Oriole (*Oriolus galbula*) in Captivity. By A. Mercier.

On *Trichoglossus rubritorques*. By G. Ollivry and A. Decoux.

Reprint of Horsfall's paper on the Sage Grouse.

L'Oiseau. I, No. 7. July, 1920.

Rearing of *Merula bouboul*. By Westley T. Page.

Notes on Methods of Procuring Insects Necessary for Bird Food. By G. Foucher.

Ornithologische Beobachter. XVII, No. 10. July, 1920. [In French and German.]

The Taxonomic Signification of Qualitative Characters. By E. Stresmann.

Ornithologische Beobachter. XVII, No. 9. June, 1920.

Report for the Swiss Central Station for Bird-banding for 1917-1918. By A. Hesse.

Le Gerfaut. X, No. 2. 1920. [In French.]

The Birds of Devon compared with those of Belgium. By Th. Bischof.

Proceedings of the Bavarian Ornithological Society. XII, No. 4. May 15, 1916. [In German.]

On the Nomenclature of Our Kingfisher. (*Alcedo ispida*.) By A. Laubmann.—*Gracula atthis* Linn. is found to be the Egyptian form of *Alcedo ispida* and having anteriority all of the races become subspecies of it and the European bird will be *A. atthis ispida*.

Wood Owl Duet. By Carnel Schmitt.

On the Forms of *Corvus coronoides* Group. By E. Stresemann. Twenty races are recognized of which three are described as new: *C. c. connectens* (p. 281), Loo Choo Islands; *C. c. madarazi* (p. 285), Colombo, Ceylon; *C. c. hainanus* (p. 286), Hoihow, Hainan.

Proceedings of the Bavarian Ornithological Society. XIII, No. 1. February 25, 1917.

Three Contributions to the Nomenclature of European Birds. By C. E. Hellmayr.—Reviews of the B. O. U. List, Reichenow and Hesse's New List of German Birds, and Studer and von Burg's Catalogue of the Birds of Switzerland.

A New Name for *Alcedo grandis* Blyth. By A. Laubmann.—Becomes *A. hercules* (p. 105), the old name antedated by *A. grandis* Gm.

Descriptions of Six New Neotropical Birds with Remarks on *Ampelion cinctus* Tsch. By C. E. Hellmayr.—*Ateleodacnis speciosa amazonum* (p. 106), Tarapoto, Peru; *Cyanolyca viridicyana cyanolaema* (p. 107), Chuhuasi, Peru; *Molothrus badius bolivianus* (p. 108), Chuquisaca, Bolivia; *Philydor ochrogaster* (p. 111), Chanchamayo, Peru; *Siptornis berlepschi* (p. 113); Chicani, Bolivia; *Grallaricula nana olivascens* (p. 117); Galipan, Venezuela. *Ampelion cinctus* Tsch. becomes *Ampelioides tschudii* (Gray), the specific name being invalidated by *Ampelis cincta* Kuhl while the genus now employed is the earliest of several that have been proposed for it.

Proceedings of the Bavarian Ornithological Society. XIII, No. 2. September 20, 1917.

On Mixed Flights of Birds. By E. Stresemann.—In the East Indies.

The Calls of the Swift. By H. Stadler and C. Schmitt.

Sitta europaea homeyeri Hart. and Related Forms. By I. van Domaniewski.—See also XVI, No. 2, p. 139 for other views on its relationship.

On the Nomenclature of Palaeaectic Crows. By C. E. Hellmayr.

Miscellanea Ornithologica. By C. E. Hellmayr.

(V) Two New Neotropical Tracheophones—*Hypolophus bernardi cajamarcae* (p. 188), Cajamarca, Peru, and *Sittasomus griseicapillus reiseri* (p. 190), Pedrinha, Brazil. (VI) On Some Types of Coerebidae. (VII) On Synonymy and Nomenclature. *Tangara lullei* (p. 198) pro-

posed for *Calliste melanotis* Scf.; *Leptopogon taczanowskii* (p. 198) for *L. rufipectus* Tacz.; *Euchlornis riefferii signata* (p. 199) for *Ampelis viridis* d'Orb. Lafr.; *Automolus roraimae* (p. 199) for *Philydor albigularis*, Tsch. *Accipiter gultifer* (p. 200) for *A. gultatus* auct. Also many changes in names.

A New Raven-Crow from Japan. By A. Laubmann.—*Corvus corone interpositus* (p. 201), Hondo.

Proceedings of the Bavarian Ornithological Society. XIII, No. 3. May 25, 1918.

Geographic Variation in the forms of *Corvus cornix*. By A. Laubmann. Six races recognized.

An Analysis of the Song of the Creeper. By H. Stadler and C. Schmitt.

Miscellanea Ornithologica. By C. E. Hellmayr. (VIII) The Forms of *Rhodinocichla rosea* are recognized, *R. r. harterti* (p. 304), Bogota, being described as new. (IX) A New Tyrant from Bolivia, *Leptopogon superciliosus albidiventer* (p. 305) Quebrada, Bolivia. (X) Remarks on the type of *Pitta angolensis* and the Ethiopian Pittas. (XI) Two New Woodpeckers from British Guiana. *Chloronerpes rubiginosus guianae* (p. 314) Yuruani River, Venezuela; *Veniliornis kirkii monticola* (p. 315) Roraima.

Proceedings of the Bavarian Ornithological Society. XIII, No. 4. November 25, 1918.

On the Wing Sound of the Golden-eye (*Glaucionetta c. clangula*). By H. Mayhoff.

Proceedings of the Bavarian Ornithological Society. XIV, No. 1. June 26, 1919.

Note on *Centropus rectunguis* and Related Species. By E. Stresemann.

On the European Creepers. By E. Stresemann.—An elaborate discussion of the relationship and distribution of *Certhia familiaris* and *C. brachydactyla*.

A Contribution to Our Knowledge of Molting in Birds. By E. Stresemann. The terminology of Dr. J. Dwight is discussed and explained.

On Our Knowledge of the Dipper. By H. Sachtleben.

Observations on Some Hitherto Overlooked Names of C. L. Brehm. By A. Laubmann.

Corvus capensis kordofanensis (p. 103) proposed for *C. c. minor* Heugl., nec Brehm.

Miscellanea Ornithologica IV. By C. E. Hellmayr. (XII) Four New Forms from Tropical America. *Catharus melpomene sierrae* (p. 126), Santa Marta; *Planesticus serranus cumanensis* (p. 127), Cumana, Venezuela; (the other two appeared previously in the "Anzeiger Orn. Gesell. Bayern" see below). (XIII) Nomenclatorial. *Corvus brachycercus* (p. 131) proposed for *C. affinis* Rupp.; *Erythromyias timorensis* (p. 133) for *Saxicola pyrrhonotus* S. Muller. Also many changes.

Proceedings of the Bavarian Ornithological Society. XIV, No. 2. December 15, 1919.

The Beginning of Bird Song at Early Dawn. By C. Zimmer. An elaborate discussion of this subject and its relation to the rising of the

sun, with extended data on the singing of German birds. A more technical treatment of a problem that recently interested many American bird students.

A New Woodpecker from Lithuania. By H. Sachtleben. *Dryobates leucotos stechowi* (p. 181).

Proceedings of the Bavarian Ornithological Society. XIV, No. 3. April 29, 1920.

On the European Black-capped Titmice. By E. Stresemann and H. Sachtleben.—Seven races recognized with elaborate discussion of variation and distribution.

On Schomburgk's 'Birds of British Guiana'. By C. E. Hellmayr.

Proceedings of the Bavarian Ornithological Society. XIV. Special Number. February 20, 1920.

In memory of Hugo Mayhoff, containing his paper on the Breeding Birds of the Lake Region of Moritzburg and critical description of his collections of water birds.

"Anzeiger". Bavarian Ornithological Society. No. 1. February 25, 1919.

Gengler and Stresemann describe *Dryobates major balcanicus* (p. 2) Kaluckowa; Hellmayr describes; *Troglodytes musculus bonariae* (p. 2) La Plata; *Pseudocolaptes boissonneautii medianus* (p. 3) Leimabamba, Peru. Sachtleben describes *Carduelis carduelis balcanica* (p. 3) Kaluckowa, Macedonia. Stresemann describes: *Cinclus cinclus orientalis* (p. 4), *Cettia cetti mülleri* (p. 5), *Picus viridis doleini* (p. 5) all from Macedonia and *P. v. romaniae* from Bucharest.

"Anzeiger". Bavarian Ornithological Society. No. 2. June 28, 1919.

Sachtleben describes *Sitta europaea cisalpina* (p. 7) Rome; Stresemann describes: *Falco moluccensis bernsteini* (p. 8) for *F. m. orientalis* preoccupied; *Emberiza schoeniclus volgae* (p. 9) South Russia; *Dryobates major italica* (p. 9) Bologna; and *D. m. candidus* (p. 10) Bucharest.

Ornithologische Monatsberichte. 28, No. 1-2. January-February, 1920. [In German.]

A New *Bradypterus*. By H. Grote. *B. roehli* (p. 7). West Usambara.

A New Name for *Turdus auritus* Verr. By A. Laubmann. *T. mupinensis* (p. 17).

Ornithologische Monatsberichte. 28, No. 3-4. March-April, 1920.

Bird-banding in Sweden. By H. Rendahl. A Fish Hawk and Herring Gull banded in Sweden found in Denmark, a Pigeon in Portugal, and a Starling in England.

Journal für Ornithologie. 68, No. 2. April, 1920.

Ornithological Observations in the Southern Ural Region (Orenburg). By H. Grote (continued).

Avifauna of the western Pripjet Swamps. By O. Graf Zedlitz—*Bonasia bonasia grassmanni* (p. 227) is described as new from East Prussia. **Journal fur Ornithologie.** 68, special number.

Birds of Egypt. (Insessores, Scansores and Coraces.) By Alexander Koenig.—A most elaborate treatment going into etymology of names, minute description of eggs with weights and measurements, etc.

Ornithological Articles in Other Journals.¹

Riley, J. H. Four New Birds from the Philippines and Greater Sunda Islands. (Proc. Biol. Society of Washington, 33, pp. 55-58. July 24, 1920.)—*Anthreptes malacensis paraguæ* (p. 55) Palawan; *A. m. bornensis* (p. 55) Po Bui, N. Borneo; *Enodes erythrophrys centralis* (p. 56) Celebes; and *Munia punctulata particeps* (p. 57) Celebes.

Oberholser, H. C. Description of a New Clapper Rail from Florida. (*Ibid.* pp. 33-34. July 24, 1920.)—*Rallus longirostris helius* (p. 33) Florida Keys.

Hartert, E. More Notes on the Crested Larks of the Nile Valley (Novitates Zoologicae, XXVI, No. I, pp. 36-40, May, 1919).

Baker, E. C. Stuart. Further Notes on Some Dicruridae (*Ibid.* pp. 41-45.)

Hartert, E. Types of Birds in the Tring Museum. B. Types in the General Collection. (*Ibid.* pp. 123-178.)—This is only the first installment, Corvidae-Meliphagidae, and cover 338 types of which only 40 have proven to have been already described or otherwise invalid. The types in the Brehm collection were listed in Novit. Zool., 1918, pp. 4-63.

Baker, E. C. Stuart. Some Notes on the Genus Surniculus. (*Ibid.*, No. 2. January 20, 1920, pp. 291-294.)—*S. lugubris stewarti* (p. 293). Ceylon is described as new.

Hartert, E. Explanation of Plates V and VI (Novit. Zool. XVI, No. 2, p. 358.)—Figuring the following rare species: *Sylvietta neumanni*, *Pachycephala moroka*, *P. tenebrosa*, *Melipotes*, *ater Dicaeum nigrilore*.

Hartert, E. The Birds of the Commander Islands. (*Ibid.* No. 3, June 20, 1920, pp. 128-158.)—Description of a collection of 860 skins made by N. Sokolnikoff and now in the Tring Museum. It comprises 152 species of which *Erolia maritima quarta* (p. 137) is described as new.

Hartert, E. and Gourdain, F. R. C., The Birds of Buckinghamshire and the Tring Reservoirs. (*Ibid.* pp. 171-259, Pl. XII and XIII.)—An admirable local avifauna.

¹Some of these journals are received in exchange, others are examined in the library of the Academy of Natural Sciences of Philadelphia. The Editor is under obligations to Mr. J. A. G. Rehn for a list of ornithological articles contained in the accessions to the library from week to week.

Collinge, W. E. On the Proposed New Subspecies of the Little Owl. (*Carine noctua* Scopoli.) (Scottish Naturalist, 1920, No. 101-102. May-June, 1920, p. 65.)—Claims that the color difference is individual and not racial.

Evans, Wm. Breeding of the Black-headed Gull in the Forth Area. (*Ibid.*, p. 71.)

Rintoul, L. J. and Baxter, E. V. Report on Scottish Ornithology in 1919, including Migration. *Ibid.* No. 103-104. July-August, 1920, pp. 99-144.

Taverner, P. A. The Scoters and Eiders. (Canadian Field Naturalist, XXXIV, No. 3, March, 1920.)—With drawings of the heads of the various species by C. E. Johnson

Wood, A. A. An Annotated List of the Birds of Coldstream Ontario Vicinity. (*Ibid.*)—194 species listed.

Hornady, W. T. Alaska Can Save the American Eagle (Natural History, XX, No. 2, March-April 1920. See also No. 3 for additional note.)—No less than 8356 eagles have been slaughtered and paid for by the Alaskan government under the recent bounty act up to May 1, 1920. Petitions of scientific and other organizations to the Alaskan Legislature for the repeal of this law are solicited and should be forwarded to the National Association of Audubon Societies, 1974 Broadway, N. Y.

Rockwell, R. B. Trials and Tribulations of a Nature Photographer. (*Ibid.*)—Deals with birds in part.

Bailey, Alfred M. The Brown Pelicans (*Ibid.*)—Excellent photographs of the breeding colonies on the Louisiana coast.

Pearson, T. G. William Dutcher. In Memoriam. (*Ibid.* No. 3. May-June, 1920.)

Bailey, Alfred M. The Silver-winged Sea Birds (*Ibid.*)—Terns and Gulls of the Louisiana Coast.

Shufeldt, R. W. Tame Pigeons Alighting in Trees. (Guide to Nature, XII, No. 2. July, 1920.)—Regarded as very exceptional.

Shufeldt, R. W. Personal Recollections of Extinct and Nearly Extinct Birds. (The Conservationist, Albany, N. Y., III, No. 5, p. 74.)—Five ducks seen in the winter of 1867 on Long Island Sound now considered to have been Labrador Ducks. A Carolina Parakeet was seen from the train at a small station somewhere in Kansas about 1884 and an Ivory-billed Woodpecker in southern Alabama in the eighties flying high overhead.

Hall, A. F. Basset. On the Occurrence of the Crested Penguin (*Eudyptes chrysocome*) in Australia. (Records of the Australian Museum, XII, No. 6. September 23, 1920.)

Dice, Lee R. The Land Vertebrate Associations of Interior Alaska. (Occasional Papers Mus. Zool., Univ. Michigan, No. 85, May 25, 1920.)—Extended reference to birds.

Redington, Paul G. A California Condor seen near Head of Deer Creek. (California Fish and Game. July, 1920. p. 133.)

Phillips, Charles. A Review of the Winter Visitant Birds in Minnesota for 1919-1920. (Fins, Feathers and Fur, No. 22. June, 1920.)

Adams, William C. Winter Feeding of Birds. (Bull. Amer. Game. Protective Asso. July, 1920.)—With illustrations of ducks making use of holes in the ice on Lake Ontario.

Brooks, Alan. The Trumpeter Swan in British Columbia. (London Field, July 31, 1920.)—By no means extinct. Has known it for thirty years and there has been little change in its numbers, was never common nor does it associate large flocks.

Baker, E. C. Stuart. The Game Birds of India. (Journ. Bombay Nat. Hist. Soc., XXVI, No. 4, 1920, pp. 885-906.)—The Tragopans.

Inglis, C. M. O'Donel, H. V. and Shebbeare, E. D. A Tentative List of the Vertebrates of the Jalpaiguri District, Bengal. Part II. Birds (*Ibid.* pp. 988-999.)—An annotated list.

Donald, C. H. The Birds of Prey of the Punjab. (*Ibid.* pp. 1000-1002.)

Robinson, H. C. and Kloss, C. Boden. On a Collection of Birds from North-eastern Sumatra. (Jour. Straits Branch, Royal Asiatic Society, No. 80, May, 1919, pp. 73-133.)—There are described as new: *Macropygia ruficeps sumatranus* (p. 77); *Brachylophus chlorolophus vanheysti* (p. 97); *Cyornis vanheysti* (p. 104); and *Buchanga leucophaea* (p. 125).

In the same journal and under the same title "Part II" (No. 81, March, 1920, pp. 79-115.) is a report on an additional collection from the same locality, district of Deli, with the following new forms: *Cryptolopha montis* (p. 99); *Pyconotus bimaculatus barat* (p. 103); and *Tephrodornis pelvica* (p. 109).

Laubmann, A. Contribution to our Knowledge of the Forms of *Alcedo atthis*. (Archiv. fur Naturg., 1918 (LXXXIV) Abt. A. heft 7, pp. 43-82.) [In German.]

Additional Publications Received.

Avicultural Magazine. XI, No. 9. September, 1920.

Bird Notes and News. IX, No. 2. Summer, 1920.

Bluebird. XII, Nos. 6-8. May-July 1920.

British Birds. XIV, No. 4. September, 1920.

Bulletin Charleston Museum. XVI, No. 5. May, 1920.

Directory of Officials and Organizations Concerned with the Protection of Birds and Game, 1920. (U. S. Dept. Agr. Department Circular 131.)

Emu, The. XX, Part 1. July, 1920.

McClymont, J. R. Essays on Early Ornithology and Kindred Subjects. London, B. Quaritch, 1920.

Records of the Australian Museum. XII, Nos. 1-9; XIII, No. 2.

South Australian Ornithologist. V, Part 3. July, 1920.

CORRESPONDENCE

Popular Bird Names.

EDITOR OF 'THE AUK':

The central idea of such of your remarks on pages 503-505 of the current volume of your journal as are in opposition to the propositions submitted in my letter of May 21 appears to be contained in your statement that "We cannot enforce upon the public what the public will not have," for you admit that the said propositions are "all very well in theory." May I say that in your very opposition you are in agreement with me, for the intent of my letter, as carefully explained in the third and the last paragraphs thereof, was to suggest a way of finding out definitely what, in matters of popular bird nomenclature, the public will have, so that it might be given them in the next edition of the A. O. U. 'Check-List.' I did not propose that the A. O. U. Committee on Nomenclature adopt forthwith the propositions presented, but merely that they submit them to the bird-studying, bird-loving public for their verdict. Have you not, in your remarks, given the reasons why you personally would express approval or disapproval of the various propositions in such a referendum, instead of speaking of the question of the referendum itself?

Again I respectfully suggest that the A. O. U. Committee on Nomenclature obtain an expression of popular will concerning the points embodied in the propositions in my former letter, rather than proceed to arrange the popular nomenclature of the 'Check-List' in accordance with any assumption, no matter how well-founded they may consider it.

HARRISON F. LEWIS.

P. O. Box No. 6, Quebec, P. Q.,
August 6, 1920.

[We regret if we misunderstood or misrepresented Mr. Lewis's suggestion. It is quite in order and proper that any suggestions should be made to the Committee and they will, we are sure, receive careful consideration. It would seem more desirable, however, that they be sent direct to the Committee rather than be published in 'The Auk,' as the journal is already overcrowded.—EDITOR.]

Baker on the Birds of the Pleistocene.

EDITOR OF 'THE AUK':

The University of Illinois has very recently published a sumptuous monograph entitled 'The Life of the Pleistocene or Glacial Period' by Mr. Frank Collins Baker, Curator of the Museum of Natural History of the University of Illinois. It is a beautifully gotten-up volume of nearly 500 pages, and illustrated by no fewer than 57 plates.

In the absence of a subtitle, the reader would naturally be led to believe that the study covered all plants and animals that formed the flora and fauna of the Pleistocene or Glacial period throughout the world, in so far as it has come to be known, including such other knowledge as may have been contributed to the subject in this work. This, however, is by no means the case; for, as its author explains (p. iv), "the area selected for study includes only that part of the United States and Canada (east of the Rocky Mountains) that was covered by the great continental ice sheets. Deposits outside of this area, therefore, cannot be included, except for purposes of comparison, as there is no way of deciding just which interval they may represent. In fact, many of the records beyond the glaciated territory represent deposits which were forming continuously throughout the entire time of the Pleistocene, they not being greatly influenced by the great ice sheets. With this statement of the purpose of the work, it is easily seen that the title 'Life of the Pleistocene' is not inappropriate."

The present writer fails to catch the point of this explanation, inasmuch as were only the *title* of this work at hand, the person considering it would surely be led to think that the life of the entire Pleistocene period was to be taken into consideration.

An especially useful and extensive bibliography is found at the end of the work (pp. 404-448), and in the main this supports the author's argument with respect to his title, as, with but few exceptions, only such works are quoted as refer to the Pleistocene of eastern North America—that of the Pacific Coast being entirely ignored.

Now those who are at all familiar with the fossil birds of the Pleistocene are well aware of the fact, that quite a number of them have been discovered in that area of North America covered by the work under consideration. These have been chiefly figured and described by Cope, Marsh, Sellards, and the present writer, and are reported from New Jersey, North Carolina, Maryland, Nebraska, Texas, Florida, and perhaps other eastern States, or from localities east of the Rocky Mountains. Turning to the bibliography, we are surprised to find that none of Cope's are cited; only one paper of Marsh's is entered, and that refers to a Mastodon; while the list of Pleistocene birds described and figured by the present writer from Vero, Florida, are accredited to Doctor Sellards, or the birds are not referred to by name at all, although the mammals are so listed.

As a matter of fact, the present writer has described more Pleistocene birds, existing and extinct, from the eastern part of the United States, than all other palaeontologists combined up to date. This omission is to be greatly deplored, for in such a formal work as the one here considered, the ignoring of so important a group of vertebrates as Pleistocene birds—the rarest of all fossil vertebrata—casts not a little doubt upon the thoroughness of still other subjects treated in this volume.

R. W. SHUFELDT.

Washington, D. C., June 25, 1920.

NOTES AND NEWS

WILLIAM DUTCHER, a Fellow and Councillor of the American Ornithologists' Union, died at his home in Chevy Chase, Maryland, on July 1, 1920, in the seventy-fifth year of his age. To him, more than to any one individual, is due the present interest in wild bird conservation; the organization and development of the National Association of Audubon Societies, of which he was president from the time of its conception until his death; and the manifold activities that have grown out of this organization. His life is an illustration of what can be accomplished by one who is willing to devote his entire energy to a cause and to persevere in spite of all obstacles. Mr. Dutcher had no backing, save such as he provided himself when, as chairman of the A. O. U. Committee on Bird Protection, he became seriously interested in what was to be his life work, but through his earnestness he interested one influential person after another in the cause until he had built up the organization which will be his monument for all time.

The last years of his life have been particularly sad, since on October 19, 1910, on the eve of a testimonial banquet intended to celebrate the achievement of his greatest ambition, the establishment of an endowed organization for wild bird conservation, he was stricken with paralysis which rendered him speechless and made further active work impossible. He recovered his physical health to some degree but was unable to move about freely, although he did attend the meeting of the Union in New York City in 1918 and some of the meetings of the National Association of Audubon Societies. His power of speech was never regained.

Beside the splendid work that he accomplished as Chairman of the A. O. U. Committee on Bird Protection, before this was taken over by the Audubon Societies, he rendered valuable service as Treasurer of the Union from 1887 to 1903, and as a member of the Council.

In his earlier years he was also an active field student, specializing on Long Island, and published many important papers of the birds of this region besides forming a valuable collection which is now in the American Museum of Natural History.

In those who, like the writer, were closely associated with him in the beginning of his life work, his kindliness, generosity and earnestness of purpose inspired a love and admiration that grew stronger as the years passed by; while to the world at large so intimately has his name become associated with the cause of bird protection, that mention of the one at once recalls the other. This in itself is a monument of which one might well be proud.

The president of the A. O. U. has appointed Dr. T. S. Palmer, who was closely associated with Mr. Dutcher in his work, to prepare a memorial address to be read at the meeting of the Union in November and published in 'The Auk' for January, 1921.—W. S.

HERBERT HUNTINGTON SMITH, Curator of the Alabama Museum of Natural History, and one of the ablest and most experienced American field naturalists, met his death on March 22, 1919, by being run over by a freight train at Tuscaloosa, Ala. For some years he had been very deaf and while walking on the railroad track he failed to hear the approaching locomotive.

Mr. Smith was born at Manlius, N. Y., January 21, 1851. He graduated from Cornell University in the class of 1872, and on October 5, 1880, married Miss Amelia Woolworth Smith, of Brooklyn, N. Y. To his wife, who was his constant companion in all his field trips and who prepared many of his specimens, especially the birds, was due in large part his success as a collector. When only 19 years of age and still a student at Cornell, he accompanied his teacher, Prof. C. F. Hartt, to the Amazon on what proved to be the first of a series of trips to the tropics. In 1873 he returned to Brazil to collect along the Amazon, spending about two years in the vicinity of Santarem, a year on the northern branches of the river and on the Tapajos, and a few months in Rio de Janeiro. Upon his return home he was commissioned to write a series of articles on Brazil for 'Scribner's Magazine,' and in 1879 appeared his book on 'Brazil—the Amazons and the Coast.'

A few months after their marriage, Mr. and Mrs. Smith went to southwestern Brazil, where most of the time between 1881 and 1886 was spent in the vicinity of Chapada and Cuyabá in the Province of Matto Grosso. Of the large collections of birds secured in this region about 4000 specimens were acquired by the American Museum of Natural History and 538 by the British Museum. In 1889 the Smiths collected in southwestern Mexico, chiefly in Guerrero and Oaxaca, for F. D. Godman, who was then securing material for the 'Biologia Centrali-Americana.' The years from 1890 to 1895 were spent in the West Indies, in Trinidad and the Windward Islands, in the interests of the West Indian Commission of the Royal Society. From 1898 to 1902 Mr. Smith was connected with the Carnegie Museum and during this time he spent three years in Colombia in the Province of Santa Marta. Here he became so seriously ill that for a time it was feared he would not recover and this experience put an end to further work in the tropics. After a year in the Museum he determined to take up his residence in the South at Wetumpka, Ala., where he devoted himself largely to collecting and studying freshwater shells. In 1910 he became curator of the Alabama Museum of Natural History, a position which he held until his death.

He was an accomplished linguist and in addition to his book on Brazil he published, in 1886, in Portuguese, 'De Rio Janeiro a Cuyabá.' He was also the author of 'His Majesty's Sloop Diamond Rock' which appeared under the name of H. S. Huntington. He was a tireless collector, but in addition he was a true field naturalist, perhaps one of the best that America has produced. During his sojourn in Brazil his work at-

tracted the attention of the Emperor Dom Pedro II and some years ago Lord Walsingham pronounced him one of the two ablest entomological collectors. In a sketch of his life from which these facts are largely derived (*Science*, XLIX, pp. 481-483, May 23, 1919), Dr. W. J. Holland ranks H. H. Smith with Humboldt and Bonpland, Wallace, Bates, Natterer, Tschudi, J. B. Hatcher and J. D. Haseman, "who courageously faced dangers in the wilderness in order to secure information at first hand as to the fauna and flora of the great continent where they labored."

T. S. P.

NICHOLAS ALEXIEVICH SARUDNY (or following the Russian form of his name, Nikolai Aleksyevich Zarudnyi), an eminent Russian ornithologist, died in March, 1919, at Tashkent in Turkestan, where he was for some years curator of the museum. According to 'The Ibis' for July, 1920, Major F. M. Bailey, of the Indian Political Service, who has recently been in Turkestan, found Sarudny and his wife "living in one room of his house, all the others having been taken from him by the Bolsheviks. In this one room was his private collection of birds stored in cardboard boxes and filling nearly the whole space up to the ceiling. This valuable collection was 'naturalized' by the Bolsheviks at the time of his death, and is now in the museum at Tashkent."

Dr. Sarudny was an authority on the birds of certain parts of Russia and also on those of Turkestan, Baluchistan, and Persia. He was a careful field naturalist and collector and published a number of papers especially in the 'Messenger Ornithologique' on the birds of Central Asia. His most important works include 'An Excursion through Northeastern Persia' with an account of the birds of that region, 1900 (262 pages); 'Birds of Eastern Persia,' 1903 (467 pages); 'Verzeichnis der Vögel Persiens,' 1911; 'Birds of the Pskov Government,' 1910; and 'Birds of the Aral Sea,' 1916 (229 pages). Three of these were published in Russian and the 'Verzeichnis' in German in the 'Journal für Ornithologie,' 1911, pp. 185-241. Sarudny made four expeditions to Persia in 1896, 1898, 1900-01, and 1903-04, and published several papers on each trip. The second and third expeditions were mainly in eastern Persia and the last, in western Persia, formed the basis of 29 separate articles, most of which were devoted to birds.—T. S. P.

FREDERICK WEBB HEADLEY, of Hertford, England, a member of the British Ornithologists' Union and a Fellow of the Zoological Society of London, died November 25, 1919, after an operation. He was the second son of Rev. Henry Headley, of Brinsop Vicarage, Herefordshire, and was born April 10, 1856. His education was received at Harrow School and the University of Cambridge, from which he graduated in 1878. Two years later he became Assistant Master in Haileybury College, Herts, where he remained until a few months before his death.

According to a sketch of his life in 'The Ibis' for July, 1920, it was his ambition to take a trip around the world and if he had been able to secure passage he would have started in August, 1919. His last work was devoted to field observations during a month spent in making notes on migration at Bardsey Lighthouse, Wales, just before undergoing his operation.

To American readers he is known chiefly by his admirable books on 'The Structure and Life of Birds,' 1895, and 'The Flight of Birds,' 1912. He was also author of 'Fauna and Flora of Haileybury,' 'Life and Evolution,' 'Darwinism and Socialism,' and some short papers.—T. S. P.

DR. HENRY KEMBLE OLIVER, an Associate of the American Ornithologists' Union since 1900, and a Life Associate since 1909, died at his apartment in Boston, on October 25, 1919. Dr. Oliver was the son of General Henry K. Oliver and was born in Salem, Mass., in 1829. He graduated from Harvard in the class of 1852 and from the Harvard Medical School in 1855. After two years in Paris and Vienna he entered upon the practice of medicine in Boston, where he later became one of the leading physicians. During the Civil War he was appointed medical inspector of camps in McClellan's army.

Dr. Oliver was a philanthropist and one of his principal gifts was a donation of several hundred thousand dollars to Harvard University on condition that the name of the donor should be kept secret until his death. When his health began to fail some years ago, he made over practically his entire fortune to the University to found a department of hygiene, reserving just enough for his own living and personal needs. At the time of his death, which occurred just on the eve of his ninetieth birthday, he was not only the oldest member of the Union but the oldest American ever associated with the Union.—T. S. P.

JOHN HENRY FLANAGAN, an Associate of the American Ornithologists' Union since 1898, died of cerebral haemorrhage at his home in Providence, R. I., February 23, 1920, after an illness of three months. At the time of his death he was in his 52nd year, having been born at Cranston, R. I., July 7, 1868. His early years were passed at Apponaug and his education was received at La Salle, Manhattan College and the Harvard Law School, from which he graduated in 1895. He studied law in the office of Edwin D. McGuinness, then Mayor of Providence, and his partner, John Doran. Upon the death of Mr. McGuinness in 1901 he became a member of the firm which was then changed to Doran and Flanagan. He was a member of the Rhode Island Bar Association and at one time was Solicitor of the town of Warwick.

Mr. Flanagan was deeply interested in birds and their eggs and had one of the best private collections of eggs in the state, but apparently published little on ornithology. He was a member of the Providence

Gun Club and the Providence Fish and Game Association and did good work in behalf of the protection of wild life. For several years he served as secretary of the Rhode Island Bird Commission and from 1905 to 1908 was Bird Commissioner for Providence County and Chairman of the Board.

He is survived by a sister, Josephine A., and three brothers, Edward J., Thomas L., and Dr. William F. Flanagan.¹—T. S. P.

ROBERT LENOX MAITLAND, an Associate of the American Ornithologists' Union since 1889, died at his home in New Rochelle, N. Y., on March 11, 1920, in his 66th year. Mr. Maitland was born in New York City, December 16, 1854, and was the son of Robert Lenox Maitland, a New York merchant, and a nephew of James Lenox, founder of the Lenox Library. He entered his father's office on Broad Street, and later became a partner in the commission firm of Robert Maitland & Co. He afterwards retired and devoted his entire time to charitable and other interests, serving on various boards and committees. Mr. Maitland was unusually modest and never sought prominence, but devoted himself earnestly to whatever he was engaged in. Although he does not appear to have published on birds his interest in the subject is attested by the fact that he maintained his membership in the Union for 30 years.—T. S. P.

A biography of Thure Ludwig Theodor Kumlien of Wisconsin, who died in 1888, is in course of preparation by Mr. Publius V. Lawson of Menasha, Wis. The paper will be illustrated and will probably be published by the Wisconsin Academy of Science, Arts and Letters.

The Government publications on birds now in press, which will probably be issued at an early date, include the second part of Bent's 'Life Histories' on Gulls and Terns, and a report by H. S. Swarth on the 'Birds of the Papago Saguaro National Monument, Arizona.' The former is a bulletin of the U. S. National Museum and the latter a publication of the National Park Service in the Department of the Interior.

The close of the twentieth year of the new century recalls the fact that the 20th Century has already witnessed great progress in ornithology, as well as in other branches of science, but it is difficult to determine the accomplishments of any particular year. It has been the custom for some time for the president of the British Ornithologists' Club to review the events of the preceding year at the annual meeting of the Club

¹ A sketch of Mr. Flanagan's life from which these facts were mainly derived appeared in the 'Providence Evening Bulletin' of February 24, 1920, and was republished with his portrait in 'The Oologist,' XXXVII, p. 42, April 1, 1920.

but these reviews are all too brief. In this country 'Bird Lore' has published brief summaries for 1901, 1902, and 1910,¹ and 'The Auk' one for 1917,² but summaries for the other years are lacking. At recent meetings of the A. O. U. some time has been devoted to a discussion of ornithological progress during the year and it is hoped that members will bear this feature in mind and contribute notes on any work which has come under their observation in 1920.

The excursion of the Swiss Society for Bird Study and Bird Protection to the Swiss National Park occupied 9 days from July 20 to 28 inclusive. The time was spent in tramps through the region from Scans to Zerne in the upper Engadine. Scans is situated at an elevation of 1670 meters, Zerne at 1497, and the highest point reached on the trip was about 3000 meters. The 57 species of birds observed were all land birds and included several of the larger species characteristic of the Alps.

The annual meeting of the Royal Australasian Ornithologists' Union will be held in October, 1920, in Perth, Western Australia. Reports recently received indicate that a good attendance is expected. When it is recalled that the journey from Sydney to Perth is comparable to that from New York to Denver, the enthusiasm of members of the R. A. O. U. in attending distant meetings is worthy of the highest commendation.

The year 1920 marks the bicentenary of Gilbert White, who was born at Selborne, England, July 18, 1720, O. S. According to the London Field of June 26, 1920, p. 945, a memorial window of three lights has been placed in the parish church at Selborne to commemorate his service to ornithology. The subject of the design is "St. Francis preaching to the Birds."

Mr. Rollo H. Beck sailed from San Francisco on Sept. 4 for Tahiti, where he will begin systematic collecting in the South Pacific in the interests of the American Museum of Natural History.

Members intending to present papers at the next annual meeting to be held in Washington, D. C., November 9-11, are requested to notify the Secretary, 1939 Biltmore St., N. W., before November as to the titles of their communications and the length of time required for their presentation. In order to allow time for discussion, which is one of the principal objects of the meeting, papers which are not illustrated should be limited to 30 minutes or less. As previous experience has shown many papers require much more time than has been estimated and authors are therefore requested to make actual tests of the time required for the pre-

¹ Bird Lore, III, pp. 215-216, 1901; IV, pp. 204-205, 1902; XIII, pp. 8-11, 1911.

² Auk, XXXV, pp. 107-110, 1918.

5
sentation of their communications so as to avoid taking up the time of others. A special invitation is extended to Associates to present papers and take part in the discussions. While all who are associated with the Union are earnestly urged to attend the meeting, this request is emphasized in the case of Members and Fellows upon whom rest the responsibilities of the organization. It is their duty to be present if possible as their council is required in conducting the business of the Society. The business meeting and elections will, as usual, be held on the evening of November 8 preceding the scientific sessions and a full attendance is particularly desired.

INDEX TO VOLUME XXXVII.

[New generic, specific, and subspecific names are printed in heavy face type.]

- ABBOTT, Charles Conrad, obituary notice of, 183.
- Acanthis*, 285.
 linaria linaria, 70, 600.
- Acanthopneuste borealis*, 283.
 b. kennicotti, 283.
- Accipiter*, 285
 cooperi 66, 293, 398, 433, 544.
 gularis, 337.
 guttatus, 629.
 guttifer, 629.
 superciliosus, 477.
 s. exitiosus, 477.
 velox, 52, 65, 398, 544.
- Accipitres*, 475.
- Actitis macularia*, 65, 396, 535, 544, 569.
- Actocheilidon*, 440.
- Aechmophorus occidentalis*, 63.
- Aegialitis*, 444.
 collaris, 105.
 meloda, 537.
 semipalmata, 143, 537, 569, 583.
- Aegithaliscus annamensis*, 170.
- Aegithalos caudatus romanus*, 166.
- Aegolius*, 447.
- Aegyptius*, 154.
- Aeronautes melanoleucus*, 68, 294, 400.
 saxatilis, 294.
- Aestrelata*, 441, 449.
 diabolica, 284.
 hasitata, 284.
- Aethopyga sanguinipectus johnsi*, 171.
 gouldiae annamensis, 171.
- Africa, birds of, 300.
- Agelaius phoeniceus*, 52.
 p. fortis, 70.
 p. megapotamus, 280.
 p. neutralis, 404.
 p. phoeniceus, 547, 570.
 p. richmondi, 280.
- Ahea, 446.
- Aimophila ruficeps eremoeca*, 54.
- Ajaia ajaja*, 568.
- Alabama, birds of, 103-104, 127-128, 296.
- Alaska, birds of, 150, 248-254.
- Aldaia ferruginea*, 612.
- Alberta, birds of, 304-306, 615.
- Alcedo atthis ispida*, 625.
 grandis, 628.
 hercules, 628.
- Alcella, 275.
- Alcippe nipalensis annamensis*, 170.
- Alexander, E. Gordon,
 fall records of Mourning Warbler in western Missouri, 137.
- Allen, Glover M., personal mention, 185; obituary notice of Horace W. Wright, 509; pattern development in Teal, 558-564.
- Alseonax murinus roehli*, 492.
 siamensis, 332.
- Aluco, 444, 447.
 pratricula, 308, 467.
- Amblycercus holosericeus australis*, 165.
- A. O. U. Check-List of North American Birds, list of proposed changes in the, 274-285; seventeenth supplement to, 439-449.
- A. O. U. Committee on Classification and Nomenclature of N. A. Birds, 186, 346.

- A. O. U., oldest members of, 186;
 permanent funds of the, 513;
 thirty-seventh stated meeting,
 110-125; thirty-eighth stated
 meeting of the, 517-518, 641.
- Ammodramus bairdi*, 457.
savannarum australis, 141.
s. bimaculatus, 71.
lecontei, 299.
nelsoni subvirgatus, 307.
- Ammoperdix heyi nicolli*, 328.
- Ampelioides tschudii*, 628.
- Ampelion cinctus*, 628.
- Ampelis*, 448.
nivea, 489.
viridis, 629.
- Amphispiza bilineata*, 54.
nevadensis nevadensis, 406.
- Anaeretes*, 453.
agraphia, 315.
- Anaeretes*, 453.
- Anaplectes jubaensis*, 489.
- Anas boschas*, 449.
novimexicana, 273.
rubripes, 289, 370.
r. tristis, 289, 543, 568.
platyrhynchos, 50, 64, 238,
 369, 449, 543.
platyrhyncha conboschas, 277.
- Andropadus gracilirostris congen-*
sis, 333.
- Andrus, C. G., observation of a re-
 markable night migration, 604.
- Anodorhynchus hyacinthus*, 293.
- Anser albifrons gambeli*, 101.
- Anthreptes longmari numanni*, 333.
malacensis paraguayae, 631.
m. bonensis, 631.
- Anthus leucocraspedon*, 331.
spinoletta japonica, 251, 282.
- Antrostomus carolinensis*, 570.
vociferus vociferus, 546.
- Anuropsis malaccensis saturata*, 329.
- Apalis flavida neumanni*, 333.
- Aphantochroa*, 295.
- Aphelocoma woodhousei*, 69.
- Aplonis kittlitzi kurodai*, 490.
- Apterornis solitarius*, 337.
- Aquila chrysaetos*, 66, 398, 433.
- Archibuteo*, 280.
lagopus sancti-johannisi, 66,
 253.
- Archilochus colubris*, 434, 546, 570.
- Arctonetta, fischeri*, 251.
- '*Ardea*,' reviewed, 334.
- Ardea goliath*, 338.
herodias, 51, 393.
h. herodias, 64, 143, 543, 566,
 568.
- Arenaria*, 447.
interpres interpres, 285.
i. morinella, 143, 538.
i. oahuensis, 285.
- Arenariidae*, 279.
- Argentina, birds of, 164, 165.
- Aristonetta*, 252, 600.
- Arizona, birds of, 640.
- Armstrong, Edw. E., remarkable
 migration of Robins, 466.
- Arthur, Stanley C., a note on the
 "Southern Teal," 126.
- Asarcia*, 279, 335.
spinosa gymnostoma, 280.
s. violacea, 280.
- Asio accipitrinus*, 449.
flammeus, 66, 308, 449.
wilsonianus, 66, 433.
- Astragalinus psaltria psaltria*, 71.
tristis pallidus, 71.
t. tristis, 548.
- Astur*, 285.
atricapillus atricapillus, 66.
a. striatulus, 310.
- Asyndesmus lewisi*, 68.
- Atalotriccus griseiceps whitelyanus*,
 177.
- Ateleodacnis speciosa amazonum*,
 628.
- Athene noctua minor*, 489.
- Atlapetes canigensis*, 165.

- Atrichornis rufescens jacksoni*, 625.
Atticora fucata roraimae, 624.
Attila cinereus, 175.
 rufus, 175.
 Averill, C. K., migration and physical proportions, a preliminary study, 572-579.
 'Avicultural Magazine', reviewed, 172, 329, 490, 625.
 Audubon, John W., 372-380.
 Audubon, Lucy Bakewell, 372-380.
 'Auk, The', complete sets of, 348-352, needs of, 182.
 'Austral Avian Record', reviewed, 330, 626.
 Australia, birds of, 338, 469, 470, 609.
 Autographs of ornithologists, 516.
 Automolus roraimae, 629.
- BAELOPHUS bicolor**, 572.
 atricristatus sennetti, 54.
 inornatus inornatus, 594.
- Bailey, B. H., review of his 'The Raptorial Birds of Iowa,' 156.
 Baker, E. C. Stuart, notice of his paper on 'Egg Collecting and its Objects,' 321.
 Baker, F. C., comment on his 'Life of the Pleistocene,' 634.
 Baldpate, 51, 241, 260, 270, 288, 311.
 Baldwin, S. Prentiss, review of his 'Bird-Banding by Means of Systematic Trapping,' 314.
 Bales, B. R., Roseate Tern (*Sterna dougalli*) breeding in Virginia, 579.
 Bangs, Outram, the Louisiana Tanager in Massachusetts, 301; notice of his 'Two New American Hawks', 477.
 Bangs, Outram and Penard, Thomas E., the proper name of the West African Serin, 300.
- Bannerman, D. A., review of his 'Birds of the Canary Islands,' 607.
 Barber, Geo. W., see Caffrey, D. J.
 Barrows, W. B., obituary notice of E. E. Brewster, 184.
Bartramia longicauda, 65, 140.
 Bartsch, Paul, review of his 'Bird Rookeries of the Dry Tortugas,' 476.
Basileuterus luteoviridis super-ciliaris, 315.
 Bavaria, birds of, 617.
 Beck, Herbert H., the occult senses in birds, 55-59.
 Beck, Rollo H., personal mention, 641.
 Belding, Lyman, biographical sketch of, 33-45.
 Bent, A. C., a flight of Newfound-land Crossbills, 298; advance note on his 'Life Histories of Gulls and Terns,' 640.
 'Berajah,' reviewed, 493.
 Bergtold, W. H., the Crow in Colorado, 134; Clark's Crow in Denver, 297.
Bhringa remifer attenuata, 153.
 Bird Liming, 620.
 'Bird-Lore,' reviewed, 168, 325, 485, 622.
 Bittern, 64, 386, 393, 440, 543.
 Blackbird, Rusty, 70, 305, 412, 436.
 Brewer's, 52, 70, 405.
 San Diego Redwing, 404.
 Red-winged, 52, 259, 312, 386, 547, 555, 570.
 Thick-billed Redwinged, 70.
 Yellow-headed, 69, 403, 601.
- Blasipus, 276.
 heermanni, 276.
Bleda notata pallidior, 333.
 'Blue Bird,' noticed, 483.
 Bluebird, 55, 77, 140, 555.
 Chestnut-backed, 77, 310, 411.
 Mountain, 55, 77, 411.

- Bobolink, 69, 163, 390, 555.
 Bob-white, 65, 557, 569.
 Bolivia, birds of, 165, 615.
Bombornis, 295.
 cuvierii cuvierii, 295.
 c. saturator, 295.
 roberti, 295.
 Bombycilla, 448.
 cedrorum, 54, 549.
 garrula, 73, 136, 137, 301, 458, 460, 461, 600.
 Bonasa umbellus umbellus, 544.
 Bonasia bonasia grassmanni, 631.
 Botaurus lentiginosus, 64, 393, 543.
 Bourne, Thomas L., another record of the White Pelican in New York, 126.
 Bowen, Grace Young, Evening Grosbeak at Valley Falls, N. Y., 298.
 Brachylophus chlorolophoides, 332.
 chlorolophus vanheysti, 633.
 Brachyramphus marmoratus, 251.
 Bradypterus barakae, 493.
 rochli, 630.
 Brainerd, Barron, obituary notice of, 184.
 Brannon, Peter A., notes on some Shore Birds of the Alabama river, Montgomery County, Alabama, 127; another occurrence of a Starling near Montgomery, Alabama, 298; the Purple Grackle at Albany, Ga., 454.
 Branta canadensis canadensis, 94, 268.
 c. hutchinsi, 94, 251, 268.
 c. minima, 96, 268.
 c. occidentalis, 94, 268.
 Brazil, birds of, 108-109, 167.
 Brewster, Edward Everett, obituary notice of, 184.
 Brewster, William, biographical sketch of, 1-23; an appreciation of, 24-27; resolutions on death of, 27-28.
 Brewster Memorial, 29-32.
 Brewsteria, 285.
 'British Birds,' reviewed, 171, 329, 489, 625.
 British Ornithologists' Club, review of 'Bulletin,' 328, 488, 624.
 British Ornithologists' Union, annual meeting of the, 514.
 Brook, Arthur, review of his 'The Buzzard at Home,' 475.
 Brooks, Alan, notes on some American ducks, 353-367.
 Brooks, Earle A., White-winged Crossbill (*Loxia leucoptera*) in West Virginia, 457.
 Brooks, Fred E., notice of his papers on economic ornithology, 323.
 Brown, Nathan Clifford, Evening Grosbeak common at Lakewood, New Jersey, 456; a Scarlet Tanager at Thirty-fourth St., New York, 458; autumnal stay of the Parula Warbler in Maine, 462.
 Bubo virginianus, 433.
 v. heterocnemis, 285, 434.
 v. lagophonus, 66.
 v. neochorus, 285.
 v. occidentalis, 399, 434.
 v. pallescens, 67.
 v. virginianus, 433, 545.
 Bucephala, 446.
 Buchanga leucophaea, 633.
 Budytes flavus macronyx, 612.
 f. thunbergi, 612.
 Buffle-head, 64, 310, 369, 389, 568.
 Bunting, Indigo, 47, 73, 436, 555, 570.
 Lark, 73.
 Lazuli, 73.
 McKay's Snow, 254.
 Painted, 300.
 Snow, 383.
 Burns, Frank L., review of his 'Ornithology of Chester County, Pennsylvania,' 155.
 Burtch, Verdi, a Loon (*Gavia immer*) caught on a fishing line,

- 286; maggots in the ears of nestling Cooper's Hawks, 293; Evening Grosbeak at Brantingham, N. Y., 299; rare and uncommon birds at Branchport, Yates Co., N. Y., 307-308; notes on the Black-crowned Night Heron in western New York, 449.
- Buteo borealis*, 52.
 b. borealis, 544.
 b. calurus, 66, 398.
 b. harlani, 130.
 ferrugineus, 280.
 lagopus sanctijohannis, 280.
 lineatus extimus, 320.
 platypterus, 467, 544.
- CALAMOHERPE brehmii*, 333.
Calamospiza melanocorys, 73.
Calcarius lapponicus alascensis, 71.
 ornatus, 53.
Calidris, 443, 451.
 alba, 278.
 canutus, 452.
 leucophaea, 432, 443, 529, 568.
 l. rubida, 278.
California, birds of, 156, 158, 478.
California Fish and Game Commission, educational work of, 189, 483.
Callene cyornithopsis, 493.
Calliste melamotis, 629.
Callocalia uropygialis heinrothi, 493.
Calloprocnias, 489.
Campephaga, 333.
Campethera loveridgei, 624.
Campothera teniolaema barakae, 489.
Canachites canadensis canace, 544.
Canada, birds of, 147.
Canary Islands, birds of, 607.
Canutinae, 442.
Canutus, 451.
 canutus, 278.
 c. rufus, 278.
- Canvas-back*, 51, 244, 253, 355, 370, 600.
Caracara, Audubon's, 52.
Cardinal, 141, 144, 436, 598.
 Gray-tailed, 54.
Cardinalis cardinalis canicaudus, 54.
 c. cardinalis 141, 144, 436, 598.
Carduelis, 285.
 carduelis balcanica, 481, 630.
Carine brama fryi, 329.
Carpodacus cassinii, 70, 405.
 mexicanus frontalis, 70, 405.
 purpureus purpureus, 306, 548, 584.
Carpospiza brachydactyla psammochroa, 332.
Carrfey, D. J., and Barber, Geo. W., notice of their papers on economic ornithology, 324.
Carter, C. M., notice of his 'Shooting in Early Days, from 1863-1919,' 482.
Casmarhynchus tricarunculatus, 489.
Casmerodius, 441.
 albus egretta, 278.
 egretta, 278, 442.
Catamenis analoides griseiventris, 315.
Catbird, 75, 145, 571, 593.
Catharacta, 440.
 skua, 440.
Catharista, 154, 338, 444.
 urubu, 51, 569.
 u. brasiliensis, 601.
Cathartes, 154.
 aura septentrionalis, 51, 397, 544, 569.
Catharus melpomene sierrae, 629.
Catherpes mexicanus conspersus, 76, 410.
Catoptrophorus semipalmatus inornatus, 65, 396, 534.
 s. semipalmatus, 534, 581, 582.

- Celeus elegans approximans*, 316.
Centronyx, 281.
 bairdi, 281.
Centropus rectunguis, 629.
Centurus aurifrons, 52.
 carolinus, 143, 569.
Cephus motzfeldi, 275.
Cercococcyx mechowi wellsi, 328.
Cercomela turkana, 488.
Cerconectes, 446.
Certhia brachydactyla, 629.
 b. lusitanica, 332.
 b. neumanni, 493.
 discolor meridionalis, 171.
 familiaris, 629.
 f. americana, 550.
 f. bachmeisteri, 493.
 f. montana, 76.
Ceryle, 424, 429.
 alcyon alcyon, 58, 67, 545, 569.
Cettia cetti mulleri, 630.
Chaetura pelagica, 132, 570.
 ussheri senegalensis, 332.
Chalcopsittacus duyvenbodei syringanuchalis, 332.
Chamaepelia, 447.
 passerina passerina, 444.
 p. terrestris, 444.
 Chapman, Frank M., description of a proposed new race of the Killdeer from the coast of Peru, 105-108; review of his 'Descriptions of Proposed New Birds from Peru, Bolivia, Argentina and Chile,' 165; review of his 'Descriptions of Proposed New Birds from Peru, Bolivia, Brazil and Columbia,' 315; review of his 'What Bird is That,' 473; review of his 'Unusual Types of Variation in *Ostenops decumanus*,' 615.
Charadrius, 285, 443, 444.
 dominicus dominicus, 537.
 dubius, 444.
 Charadrius d. curonicus, 279.
 hiaticula, 279, 444.
 h. septentrionalis, 279.
 melodus, 444.
 mongolus, 444.
 nivosus, 444.
 n. nivosus, 279.
 n. tenuirostris, 279.
 semipalmatus, 444.
Charitillas kavirondensis, 489.
Charitonetta albeola, 64, 310, 369, 568.
 Chase, Richard M., Bohemian Waxwings at Rochester, N. Y., 461.
 Chat, Long-tailed, 75.
 Yellow-breasted, 313, 391, 438, 554, 598.
Chaulelasmus streperus, 64, 240, 370.
Chelidon, 448.
Chen caerulescens, 100, 260, 432, 468.
 hyperboreus hyperboreus, 251, 432.
 Chewink, see Towhee.
 Chickadee, 550.
 Acadian, 142, 597.
 Carolina, 258, 572.
 Hudsonian, 306, 463, 550, 593.
 Labrador Brown-capped, 463, 606.
 Long-tailed, 76.
 Mountain, 76, 411.
 Plumbeous, 54.
 Chile, birds of, 165, 616.
 Chittenden, F. H., notice of his writings on economic ornithology, 323, 324.
Chlamydera maculata nova, 488.
Chlidonias, 440.
 leucoptera leucoptera, 440.
 nigra surinamensis, 440.
Chloephaga dispar, 488.
 inornata, 488.
 magellanica, 488.

- Chloroceryle, 424-429.
 aenea, 425-428.
 amazona, 425, 428.
 americana, 425-428.
 inda, 425-428.
- Chloronerpes rubiginosus, 320.
 r. guianae, 629.
 r. roraimae, .
- Chondestes grammacus strigatus,
53, 71, 405.
- Chordeiles virginianus henryi, 68,
400.
 v. virginianus, 434, 546.
- Chororhea chrysopogon laetus, 153.
- Chroicocephalus, 276.
 atricilla, 276.
 franklinii, 276.
 philadelphia, 276.
- Chrysoptilus melanochlorus juae,
316.
 m. perplexus, 316.
 punctigula notata, 316.
- Chuck-will's widow, .
- Ciceronia, 275.
- Cichladusa guttata mulleri, 333.
- Cinclodes, 164.
 fuscus, 615.
 oustaleti baekstroemii, 615.
 tazanowskii, 161.
 tucumanus, 165.
- Cinclus cunclus orientalis, 630.
- Cinnyris habessinicus turkanae,
489.
 schillingsi, 332.
- Circus hudsonius, 52, 65, 398, 544.
- Cissa margaritae, 170.
- Cisticola cisticola cisticola, 489.
 c. harterti, 489.
- Clangula, 442, 446.
 clangula americana, 51, 136,
150, 252, 358, 369, 542.
 hyemalis, 442.
 islandica, 150, 356.
- Cleland, J. B., review of his report
on the food of Australian birds,
168.
- Coale, Henry K., curious habits of
the Whip-poor-will, 293; Bo-
hemian Waxwing in Illinois, 301.
- Cobb, Stanley, midsummer birds in
the Catskill Mountains, 46-49.
- Coccyzus americanus americanus,
67.
 a. occidentalis, 67.
 erythrophthalmus, 67, 545.
 minor caymanensis, 316.
- Coker, Robert E., review of his
'Habits and Economic Relations
of the Guiana Birds of Peru', 160-
161.
- Colaptes auratus, 52, 570.
 a. luteus, 309, 546.
 cafer collaris, 52, 68, 400.
- Colinus virginianus virginianus, 65,
569.
- Collinge, W. E., notice of his con-
tributions to economic ornithol-
ogy, 483-485.
- Colombia, birds of, 176.
- Colorado, birds of, 60-77, 130, 131,
134, 299, 300, 310.
- Columbia livia targia, 332.
 pallida, 332.
- Columbina, 447.
- Colymbus, 445, 617.
 holboelli, 430.
 nigricollis californicus, 63, 231.
- Compsothlypidae, 444, 598.
- Compsothlypis americana ameri-
cana, 313.
 a. pusilla, 445.
 a. usneae, 142, 445, 462.
- Comstock, Anna B., notice of her
'Suggestions for a Graded Course
in Bird Study,' 482.
- 'Condor, The,' reviewed, 169, 326,
486, 623.
- Conopoderas atypha, 159.
 a. agassizi, 160.
 a. crypta, 159.
 a. erema, 160.
 a. nesiarcha, 160.

- Conopoderas a. rava*, 159.
 percernis, 160.
Conopophaga melanogaster, 177.
 Coot, 51, 64, 260, 394.
 Copeland, Ada B., Mesa Co., Colorado, notes, 310.
Coprotheres pomarinus camtschaticus, 284.
Coragyps, 444.
 urubu urubu, 444.
 Cormorant, Double-crested, 259, 567.
 Cory, Charles B., description of a new species and subspecies of *Tyrannidae*, 108-109; review of his 'Review of Reichenbach's Genera *Siptornis* and *Cranioleuca*,' 164; review of his 'Catalogue of Birds of the Americas,' 315-316; notice of his 'Review of the Genus *Rhynchoecylus*,' 319.
Corythornis, 331.
 cristata cristata, 331.
 c. galerita, 331.
 c. nais, 331.
 c. thomensis, 331.
Corvus affinis, 629.
 brachycercus, 629.
 brachyrhynchos brachyrhynchos, 69, 435, 547, 570.
 b. hesperis, 134, 401.
 capensis kordofanensis, 629.
 c. minor, 629.
 corax sinuatus, 401, 453.
 corone interpositus, 629.
 coronoides connectens, 628.
 c. hainanus, 628.
 c. madarazi, 628.
 ossifragus, 570.
 pica, 496.
 Costa Rica, birds of, 601-603.
Cotinga rubra, 468.
 cuprea, 468.
Cotyle rupestris spatzi, 332.
 Cowbird, 52, 69, 305, 402, 584, 597.
 Crandall, Lee S., early Virginia Rail in New York, 452.
 Crane, Sandhill, 600.
Crateropus melanops clamosus, 489.
 terricolor sindianus, 625.
Creciscus jamaicensis, 128.
 Creeper, Brown, 550, 598.
 Rocky Mountain, 76.
Crocethia, 443, 452.
 alba, 443.
Crocomorphus flavus peruvianus, 316.
 Crosby, M. F., see Frost, Allen.
 Crow, 69, 134, 435, 483, 570, 597.
 Fish, 570.
 Western, 401.
Cryptoglaux, 447, 449.
 fumerea richardsoni, 447.
 tengmalmi richardsoni, 447.
Cryptolopha montis, 633.
 Crossbill, Newfoundland, 298, 456.
 Red, 375.
 White-winged, 134, 436, 457.
Crucirostra, 448.
 Cuba, birds of, 140.
 Cuckoo, 171.
 Black-billed, 67, 545, 597.
 California, 67.
 Yellow-billed, 67.
Curaeus aterrimus, 175.
 curaeus, 175.
 Curlew, Bristle-thighed, 253.
 Hudsonian, 260, 536.
 Jack, see Hudsonian.
Cutia nipalensis legalleni, 170.
Cyanocephalus cyanocephalus, 69, 402.
Cyanocitta cristata cristata, 547, 570.
 stelleri diademata, 69, 401.
Cyanolyca ciridicyana cyanolaema, 628.
 Cygnus, 447.
Cyornis vanheysti, 633.

- DABBENE, Roberto, review of his 'Species and Subspecies of the Genera Cinclodes and Gepsitta,' 164.
- Dafila acuta, 51, 370.
- Daggett, Frank Slater, obituary notice of, 508.
- Daption, 446.
- Davis, John J., notice of his papers on economic ornithology, 324.
- Delaware, birds of, 257.
- Delaware Valley Ornithological Club, dinner to W. L. Selater, 187.
- DeMeritte, Edwin, peculiar nesting of Hermit Thrushes, 138-140.
- Demiegretta greyi, 177.
- Dean, F. Roy, notes from St. Louis, Mo., 467.
- Dendragapus obscurus obscurus, 65.
- Dendrocinclapa, 489.
 guianensis, 489.
- Dendrocopos, 448.
- Dendroica, 409.
 aestiva aestiva, 74, 571.
 auduboni auduboni, 409.
 bryanti castaneiceps, 282.
 caerulescens caernsi, 93, 552.
 c. caerulescens, 93, 142, 549, 552, 592.
 castanea, 143, 437.
 cerulea, 437, 598.
 coronata, 54, 74, 258, 261, 386, 437, 549, 591.
 discolor, 142, 258, 571, 601.
 dominica, 571, 591.
 erithachorides castaneiceps, 282.
 fusca, 142, 438, 550, 592.
 graciae, 409.
 magnolia, 142, 437, 549.
 pennsylvanica, 549.
 striata, 438, 591.
 tigrina, 437.
 townsendi, 75.
- Dendroica vigorsii, 438, 550, 571.
 virens, 142.
- Dent, Paul, and Joherst, Dent, Bohemian Waxwing at Salem, Mo., 460.
- Dicaeum minullum uchidai, 490.
 nigrilore, 631.
- Dichropogon, 177.
- Dickcissel, 601.
- Dicrurus elgonensis, 489.
- Diglossa mystacalis albilinea, 165.
- Dinornis maximus, 624.
- Diomedea irrorata, 161.
- District of Columbia, birds of, 291.
- Dixon, Joseph, review of his 'Wild Ducks in a City Park,' 158.
- Dodo, 496.
- Dolichonyx oryzivorus, 69.
- Dove, Ground, 376.
 Inca, 51.
 Mourning, 51, 130, 597.
 Western Mourning, 65, 397.
- Dowitcher, 143, 260, 307, 523, 540.
 Long-billed, 501, 523.
- Dryobates borealis, 569.
 leucotos stechowii, 636.
 major balcanicus, 630.
 m. italiae, 630.
 m. candidus, 630.
 pubescens homorus, 67.
 p. medianus, 67, 285.
 p. microleucus, 285.
 p. pubescens, 569.
 scalaris cactophilus, 146.
 s. bairdi, 52, 146.
 s. **giraudi**, 146.
 villosus, 399.
 v. monticola, 67.
 v. villosus, 545.
- Dryodromus rufifrons turkanae, 488.
- Duck, Black, 78, 82, 260, 287, 289, 370, 386, 387, 543, 568.
 Lesser Scaup, 51, 244, 260, 354, 431.

- Duck, Red-legged Black, 289.
 Ring-necked, 51, 304, 355, 369, 431.
 Ruddy, 245, 370.
 Scaup, 260, 354, 370, 387.
 Wood, 543.
- Dumetella carolinensis, 75, 306, 571, 593.
- Dunlin, see Sandpiper, Red-backed.
- Dutcher, William, obituary notice of, 606.
- Dwight, Jonathan, nomenclatural casuistry, 145; the plumages of Gulls in relation to age as illustrated by the Herring Gull (*Larus argentatus*) and other species, 262-268.
- EAGLE, Bald, 375, 569, 597,
 Golden, 66, 398, 433.
 Kamchatkan Sea, 250.
 Northern Bald, 433.
- Earnshaw, F. L., see Lawyer, G. A.
- Easter Island, 616.
- Economic Ornithology in Recent Entomological Publications, 322, 619.
- Edson, Wm. L. G., and Horsey, R. E., rare or uncommon birds at Rochester, N. Y., 140-142; Bohemian Waxwing (*Bombycilla garrula*) at Rochester, N. Y., 461; Labrador Brown-cap Chickadee at Rochester, Monroe Co., N. Y., 463.
- Egretta brevipes, 177.
 candidissima, 393, 568.
- Egret, 260, 432, 568-579.
 Snowy, 393, 568.
- Egypt, 620.
- Eider, 596.
 King, 618.
- Eifrig, C. W. G., in the haunts of Cairns' Warbler, 551-558; additions to 'The Birds of Allegany and Garrett Counties, Md.' 598-600.
- 'El Hornero,' reviewed, 173.
- Elanus axillaris, 321.
 leucurus majusculus, 477.
- Elaenia flavogaster macconnelli, 177.
 cristata whitelyi, 177.
- Elminia, 302.
- Elseya dubia, 279.
- Emberiza schoeniclus volgae, 630.
- Empidonax difficilis, 68.
 griseus, 133.
 flaviventris, 92, 435, 547.
 minimus, 69, 435, 547.
 trailii trailii, 68.
 t. alnorum, 65, 435.
 virescens, 92.
 wrighti, 69, 401.
- Empidonomus varius parvirostris, 329.
- 'Emu, The,' reviewed, 172, 330, 625.
- Endomychura, 275.
- England, birds of, 151, 158, 610, 616.
- Eno, Henry Lane, Evening Grosbeaks at Princeton, New Jersey, 456.
- Enodes erythrophrys centralis, 631.
- Eophona melanura melanura, 320.
 migratoria pulla, 320.
- Eremomela badiceps turneri, 488.
 elegans elgonensis, 488.
- Ereunetes mauri, 528.
 pusillus, 128, 527.
- Erismatura, 446.
 jamaicensis, 245, 370.
- Erithacus rubecula atlas, 328.
- Erolia ferruginea, 284.
 f. chinensis, 284.
 maritima quarta, 631.
- Eroliainae, 442.
- Erranornis**, 302.
 albicauda, 302.
 longicauda, 302.

- Erranornis, schwebischi, 302.
 teresita, 302.
Erratum, 468.
Erythropygia, 493.
Erythromyias timorensis, 629.
Essex County Ornithological Club,
 notice of 'Bulletin,' 318.
Estrilda astrild litoris, 493.
 niedieki, 333.
 a. adesma, 333.
 incana hapalochroa, 333.
Ethelornis, 609.
Eunetta falcata, 250, 277.
Euchloris riefferi signata, 629.
Euphagus carolinus, 70, 436.
 cyanocephalus, 52, 70, 405.
 c. minusculus, 623.
Eupoda asiatica, 279.
 montana, 279.
Eupsychortyx cristatus cristatus,
 214.
 c. horvathi, 219.
 leucopogon decoratus, 210.
 l. leucopogon, 203.
 l. leucotis, 207.
 l. littoralis, 211.
 sonnini mocquerysi, 201.
 s. sonnini, 194.
Europe, birds of, 166, 481.
Eurystomus calonyx, 337.
Euscarthmus gularis, 175.
 impiger **cearae**, 109.
 i. impiger, 109.
 i. inornatus, 109.
 rufilatus, 175.
Eusiptornoides, 164.
Eustephanus fernandensis, 616.
 leyboldii, 616.
Examthemops, 278.
 rossi, 278.
FALCO aesalon, 447.
 columbarius columbarius, 544.
 mexicanus, 66, 398.
 islandus, 132.
 moluncensis bernsteini, 630.
 Falco m. ventralis, 630.
 peregrinus anatum, 310, 398.
 regulus, 447.
 sparverius, 52, 545.
 s. phalaena, 66, 399.
 s. sparverius, 52, 66, 308.
 'Falco,' reviewed, 494.
Falcon, Prairie, 66, 398.
Farley, J. A., sandpipers wintering
 at Plymouth, Massachusetts, 78-
 84.
Farwell, Ellen D., notice of her
 'Bird Observations near Chicago,'
 157.
Finch, Black Rosy, 70.
 Cassin's Purple, 70, 405.
 Gray-crowned Rosy, 70.
 Hepburn's Rosy, 70.
 House, 70, 405.
 Purple, 47, 548 584.
Figgins, J. D., the status of the sub-
 specific races of *Branta canadensis*, 94-102.
'Fins, Feather and Fur,' noticed,
 483.
Fisher, A. K., In Memoriam: Ly-
 man Belding, 33-45.
Fleisher, Edward, Notes on the
 birds of southeastern North Caro-
 lina, 565-572.
Flanagan, J. A., obituary notice of,
 639.
Fleming, J. H., and Lloyd, Hoyes,
 Ontario bird notes, 429-439.
Fleming, J. H., see also Saunders,
 W. E.
Flicker, 52, 387, 392, 570.
 Northern, 309, 546.
 Red-shafted, 52, 68, 400.
Florida, birds of, 128-130, 142-143,
 258, 261, 476.
Florida caerulea, 568, 590.
Floyd, Charles B., Orange-crowned
 Warbler (*Vermivora celata celata*)
 in Massachusetts, 137; Great

- Crested Flycatcher in Massachusetts in winter, 295.
 Flycatcher, Acadian, 92.
 Alder, 68, 435, 555.
 Ash-throated, 68, 400.
 Crested, 144, 295, 555, 570.
 Gray, 133.
 Green-crested, 92.
 Least, 69, 435, 453, 547, 555.
 Olive-sided, 68, 305, 435, 466, 546.
 Traill's, 68.
 Western, 68.
 Wright's, 69, 401.
 Yellow-bellied, 92, 435, 547.
 Forbush, E. H., notice of his 'Outdoor Bird Study' and 'Bird Houses and Nesting Boxes,' 159.
 Ford, Louise P., see Pellew, Marion J.
 Fossil Birds, semicentennial of the discovery of, in North America, 516.
 Francolinus, 493.
 Frederickena, 177.
 Freeman, Daniel, notice of his 'A Bird Calendar of the Fargo Region,' 478.
 Fringilla coelebs, 608.
 teydea, 608.
 Frost, Allen, and Crosby, M. F., some summer residents of Dutchess County, N. Y., 597.
 Frugilegus, 176, 280.
 frugilegus, 280.
 Fulica americana, 51, 64, 394.

 GADWALL, 64, 240, 260, 370.
 Galapagos, birds of, 162.
 Galerida cristata muhlei, 612.
 Gallinago delicata, 64, 522, 543.
 Gallinule, Purple, 130, 597.
 Galloperdix spadicea stewarti, 328.
 Gallus gallus bankiva, 320.
 g. ferrugineus, 320.
 g. gallus, 320.

 Gannet, 388, 431.
 Garrulax milleti, 170.
 Gavia, 445.
 arctica viridigularis, 275.
 immer, 258, 286.
 Gehring, John George, William Brewster: an appreciation, 24-27.
 Gelochelidon anglica, 276.
 nilotica aranea, 276.
 Geocichla, 493.
 Geococcyx californianus, 52.
 Georgia, birds of, 257-258, 454.
 Geositta, 164.
 Geothlypis trichas, 571.
 t. occidentalis, 75, 410.
 t. trichas, 306, 550.
 Germany, birds of, 333.
 Gerygone griseus, 332.
 Gifford, E. W., notice of his 'Field Notes on the Land Birds of the Galapagos Islands,' 162.
 Giraud, J. P., note on, 146.
 Glareola, 493.
 Glaucidium perlatum, 178.
 Glaucion, 446.
 Glaucionetta clangula americana, 442.
 c. clangula, 629.
 islandica, 442.
 Globicera oceanica townsendi, 159.
 Gnatcatcher, Blue-gray, 55, 144, 258, 438, 464, 542.
 Golden-eye, 51, 135, 232, 369, 386, 372, 542.
 Barrow's, 356.
 Goldfinch, 71, 548, 555.
 Arkansas, 71.
 Goldfinch, European, 481.
 Pale, 71.
 Godwit, Marbled, 142, 304, 540, 580, 581.
 Hudsonian, 304, 432.
 Goose, Blue, 260, 432, 468.
 Canada, 291.
 Hutchin's, 251.
 Snow, 251, 432.

- Goshawk, 66.
Western, 310.
- Grackle, Boat-tailed, 259, 295, 570.
Bronzed, 70, 387, 547.
Great-tailed, 53.
Purple, 454.
- Gracula chrysoptera, 468.
nobilis, 468.
- Grallaria watkinsi, 315.
boliviana, 315.
- Graucalus caledonicus thilenii, 332.
macei andamanus, 332.
- Great Britain, birds of, 151, 158,
610, 616.
- Grebe, Eared, 62, 231, 304.
Holboell's, 304, 430.
Horned, 557.
Pied-billed, 50, 63, 235, 304,
431, 542, 557.
Western, 63.
- Gregory, Stephen S., Jr., Harris's
Sparrow in northern Michigan,
135.
- Grinnell, George Bird, recollections
of Audubon Park, 372-380.
- Grinnell, Joseph, sequestration
notes, 84-88; review of his 'The
English Sparrow in Death Val-
ley,' 478. See also Hall, H. M.
- Griscom, Ludlow, notes on the win-
ter birds of San Antonio, Texas,
49-55; see also Miller, W. deW.
- Griscom, Ludlow, and Janvrin, Dr.
E. R. P., the Black Skimmer on
Long Island, N. Y., 126.
- Grosbeak, Black-headed, 73, 407.
Blue, 558, 585.
Evening, 141, 298, 299, 308,
436, 455, 456, 547.
Pine, 305, 308, 436.
Rose-breasted, 305, 436, 548,
557.
Western Evening, 299.
- Grouse, Dusky, 65.
Ruffed, 392, 544, 557.
Sage, 474.
- Grus canadensis, 600.
- Guillemot, Black, 386, 596.
- Guiraca caerulea caerulea, 558, 598.
- Gull, Bonaparte's, 259.
Franklin's, 237.
Great Black-backed, 80, 431.
Herring, 80, 259, 542, 567, 596.
Iceland, 140.
Laughing, 259, 567.
Ring-billed, 63, 237, 259.
Sabine's, 311.
- Gymnobucco, 493.
- Gymnoris pyrgita reichenowi, 333.
- Gymnostenops montezumae, 603.
- Gyr Falcon, White, 132.
- HAEMATOPUS bachmani, 253.
frazari, 279.
palliatu, 540, 569.
p. frazari, 279.
- Haliaetus leucocephalus alascanus,
433.
l. leucocephalus, 569.
- Hall, H. M. and Grinnell, Joseph,
review of their 'Life-Zone Indi-
cators in California,' 163.
- Halobaena caerulea, 335, 505.
- Hanna, G. Dallas, additions to the
avifauna of the Pribilof Islands,
Alaska, including four species
new to North America, 248-254.
- Haplornis, 160.
- Harelda, 442.
hyemalis, 370, 442.
- Harper, Francis, the song of the
Boat-tailed Grackle, 295-297.
- Harpyhaliaetus coronatus, 154.
- Hartert, E., review of his 'Vogel der
palaarktischen Fauna', 472.
- Hawk, Broad-winged, 467, 544, 557.
Cooper's, 66, 293, 398, 433,
544, 557.
Desert Sparrow, 66, 399.
Duck, 310, 398.
Harlan's, 130.
Marsh, 52, 65, 391, 398, 544.

- Hawk, Pigeon, 544.
 Red-shouldered, 48.
 Red-tailed, 48, 52, 544, 557.
 Rough-legged, 66, 253.
 Sharp-shinned, 52, 65, 398, 544, 557.
 Sparrow, 52, 66, 308, 545.
 Western Red-tailed, 66, 398.
- Headley, F. W., obituary notice of, 638.
- Hedydipna platyrhynchos karamojoensis, 489.
- Hedymeles melanocephalus papago, 282.
 m. melanocephalus, 282.
- Helinaia, 444.
 swainsoni, 445, 589.
- Hellmayr, C. E., and Laubmann, A., review of their, 'Nomenclator der Vogels Bayerns,' 617.
- Helmuth, W. T., extracts from notes made while in naval service, 255-261.
- Helodromas, 443, 451.
 solitarius solitarius, 128, 432, 534, 544.
 s. cinnamomeus, 64.
- Hemipus hirundinaceus, 335.
 obscurus, 335.
- Hemixus tickelli griseiventer, 170.
- Hen, Heath, 386, 391.
- Henicorhina leucosticta hauxwelli, 624.
- Henninger, W. F., on the nesting of the Black Duck in Ohio, 287; the Plain Titmouse, a new bird for Oregon, 594.
- Henshaw, Henry W., In Memoriam: William Brewster, 1-23.
- Herodias, 441.
 egretta, 432, 568, 579.
- Heron, Black-crowned Night, 64, 260, 394, 449, 568.
 Great Blue, 51, 64, 143, 260, 304, 393, 543, 566, 568.
- Heron, Little Blue, 260, 566, 568.
 Louisiana, 260, 261, 566, 568, 580.
 Yellow-crowned Night, 260.
- Herpornis xantholeuca sordida, 170.
- Hesperiphona vespertina montana, 299.
 v. vespertina, 141, 308, 406, 455, 456, 547, 585.
- Heteractitis, 443.
 brevipes, 278.
- Heteromirafra archeri, 329.
- Heteroscelus, 443.
 brevipes, 250.
 incanus, 443.
- Hewitt, Charles Gordon, obituary notice of, 511.
- Himantopus, 447.
 mexicanus, 396.
- Hine, John S., review of his 'Birds of the Katmai Region, Alaska,' 150-151.
- Hippolais pallida, 333.
 caligata, 333.
- Hirundo, 448.
 erythrogastra, 73, 407, 571.
- Hoffman, Ralph, a Raven pellet, 454.
- Holland, birds of, 147, 320.
- Hollister, N., notice of his 'Report of the Superintendent of the National Zoological Park,' 480; notice of his 'The National Zoological Park,' 319; relative abundance of wild ducks at Delavan, Wisconsin, 367-371.
- Holt, Ernest G., Bachman's Warbler breeding in Alabama, 103-104.
- Horsey, R. E., see Edson, Wm. L. G.
- Horsfall, R. Bruce, review of his paper on the habits of the Sage Grouse, 474.
- Howe, R. Heber, Jr., Egret at South Orleans, Mass., 579.

- Howell, A. H., obituary notice of Thomas McA. Owen, 510.
- Huber, Wharton, description of a new North American duck, 273-274.
- Hudson, W. H., notice of his 'The Book of a Naturalist', 158; review of his 'Birds in Town and Village,' 610; review of his 'Adventures among Birds,' 610.
- Hummingbird, Broad-tailed, 68, 400.
- Ruby-throated, 258, 305, 434, 570, 576.
- Hydranassa tricolor ruficollis, 566, 568, 580.
- Hydrobates, 441.
- pelagicus, 441.
- Hydrochelidon, 440.
- nigra surinamensis, 64, 238.
- Hydrocoloeus, 276.
- minutus, 276.
- Hydroprogne, 440.
- caspia imperator, 276.
- Hylocichla aliciae aliciae, 254, 283.
- a. bicknelli, 284, 591.
- fuscescens fuscescens, 48.
- f. salicicola, 77.
- guttata, 55.
- g. auduboni, 77.
- g. guttata, 77.
- g. pallasi, 551.
- minima aliciae, 283.
- m. bicknelli, 284.
- mustelina, 572.
- ustulata swainsoni, 77, 551.
- u. ustulata, 465.
- Hylocryptus, 315.
- erythrocephalus, 315.
- Hypocnemis poecilonota, 177.
- Hypocentor, 280.
- rusticus, 281.
- Hypolophus, 177.
- bernardi cajamarcae, 628.
- Hypothymis, 160.
- Hypsibates, 447.
- IBIDIDAE, 441.
- 'Ibis, The,' reviewed, 170, 327, 488, 624.
- Icteria virens longicauda, 75.
- v. virens, 313, 438.
- Icterus bullocki, 70.
- spurius, 570.
- Ichthyomus, 423.
- Ifrita coronata, 624.
- kowaldi, 624.
- Illinois, birds of, 137, 157, 301, 466, 600, 616.
- Illinois Audubon Society, notice of 'Bulletin', 483.
- International Ornithological Congress, 179.
- Ionornis martinicus, 130.
- Iowa, birds of, 156, 306-309, 620.
- Iredale, Tom T., Ridgway's Birds of North and Middle America, Vol. VIII, 344-345.
- Iridoprocne bicolor, 548, 571, 598.
- Ithaginis clarkei, 329.
- Ixobrychus sinensis moorei, 159.
- JAEGER, Long-tailed, 261.
- Parasitic, 261.
- Pomarine, 261.
- Janvrin, Dr. E. R. P., see Griscom, Ludlow.
- Japan, birds of, 411, 477.
- Jay, Blue, 547, 570.
- Canada, 134, 547.
- Long-crested, 69, 401.
- Rocky-Mountain, 401.
- Woodhouse's, 69.
- Pinon, 69, 402.
- Joherst, Dent see Dent, Paul.
- Johnson, Charles Eugene, an occult food sense in birds, 339-341; summer bird records from Lake County, Minnesota, 541-551.
- Jourdain, F. R. C., see Mullens, W. H.

- 'Journal für Ornithologie,' reviewed, 333, 493, 630.
- Juan Fernandez Islands, birds of, 616.
- Junco, 53, 383.
 Gray-headed, 72.
 Montana, 72.
 Pink-sided, 72.
 Shufeldt's, 72.
 Slate-colored, 72, 254, 548, 597.
 White-winged, 72.
- Junco aikenii, 72.
 hyemalis carolinensis, 556.
 h. connectens, 72.
 h. hyemalis, 72, 254, 548.
 h. mearnsi, 72.
 h. montanus, 72.
 insularis, 281.
 mearnsi insularis, 281.
 m. townsendi, 281.
 oreganus townsendi, 281.
 phaeonorotus caniceps, 72.
 vulcani, 603.
- KANSAS, birds of, 457.
- Kennard, Fred H., notes on the breeding habits of the Rusty Blackbird in northern New England, 412-422.
- Kent, Edward G., Pileated Woodpecker in Morris County, N. J., 132.
- Killdeer, 51, 65, 105, 260, 309, 397, 537, 557.
- Kingbird, 68, 144, 310, 435, 546, 555, 570, 597.
 Arkansas, 68, 142.
 Cassin's, 400.
- Kingfisher, Belted, 52, 67, 261, 545, 569.
- Kinglet, Golden-crowned, 54, 77, 551.
 Ruby-crowned, 55, 76, 85, 438, 572, 594.
- Kite, White-tailed, 321.
- Kittiwake, 80.
- Klamath Lake bird reservation, 347.
- Kloss, C. Boden, see Robinson, H. C.
- Knestrometopon, 493.
- Knipolegus comatus, 175.
 lophotes, 175.
- Knot, 451, 466, 525.
- Krieker, 304, 525.
- Kumlien, Ludwig, biography of, 640.
- Kuroda, Nagamichi, some North American birds obtained in Japan, 311; notice of his 'Descriptions of Five New Forms of Japanese Pheasants', 477.
- LAGONOSTICTA rhodopareia neglecta 333.
 rubricata, reichenowi, 493.
- Lagopus leucurus rainierensis, 623.
- Lamprolaima cupreipennis, 328.
 olivacea, 328.
 rothschildi, 328.
- Lamprocolius, 493.
- Lanivireo solitarius plumbeus, 74, 408.
 s. solitarius, 549, 571.
- Lanius borealis, 74.
 hypoleucus siamensis, 332.
 ludovicianus excubitorides, 54, 74.
 l. grinnelli, 170, 282.
 l. migrans, 136, 306.
- Lano, Albert, Trumpeter Swan (*Olor buccinator*) in western Minnesota, a correction, 127; Evening Grosbeak (*Hesperiphona v. vespertina*), in Minnesota in mid-summer, 455.
- Lark, Desert Horned, 69.
 Prairie Horned, 555.
 Horned, 81, 390.
 Saskatchewan Horned, 69.

- Larus affinis*, 268, 344.
 atricilla, 268, 567.
 a. megalopterus, 276.
 argentatus, 268, 542, 567.
 brachyrhynchus, 268, 276.
 californicus, 268.
 canus, 268, 276.
 delawarensis, 63, 237, 268.
 franklini, 237, 268.
 fuliginosus, 331.
 fuscus, 344.
 f. brittanicus, 344.
 glaucescens, 268.
 glaucus, 446.
 heermani, 268.
 hyperboreus, 268, 446.
 h. barrovianus, 166, 284.
 h. hyperboreus, 284.
 kumlieni, 268.
 leucopterus, 140, 208.
 marinus, 268, 431.
 minutus, 268.
 nelsoni, 268.
 occidentalis, 268.
 o. livens, 276.
 philadelphia, 268.
 schistisagus, 268.
 vegae, 268.
Latham, Roy, unusual habits of the Chimney Swift, 132-133; birds of irregular occurrence on Long Island, N. Y., 306.
Laubmann, A., see Hellmayr, C. E.
Lawrence, Newbold T., wild swan on Long Island, N. Y., 127.
Lawyer, Geo. A. and Earnshaw, F. L., review of their 'Game Laws for 1920,' 614.
Leavitt, Robert G., review of his 'Bird Study in Elementary Schools,' 609.
Legatus albicollis successor, 328.
 variegatus nevagans, 328.
 'Le Gerfaut', reviewed, 331, 491, 628.
 'L'Oiseau,' reviewed, 491, 627.
Leptasthenura punctigula, 165.
 andicola peruviana, 165.
Leptophaethon catesbyi, 277.
 lepturus catesbyi, 277.
Leptopogon rufipectus, 629.
 superciliaris albidiventer, 629.
 taczanowski, 629.
Leopold, Nathan F., Jr., Bohemian Waxwing at Chicago, Ill., 137; rare and unusual birds in the Chicago area, during the spring of 1920, 600; see also Watson, J. D.
Leucopolius, 285.
 alexandrinus nivosus, 279.
Leucosticte atrata, 70.
 tephrocotis littoralis, 70.
 t. tephrocotis, 70.
Lewis, G. P., see Watson, J. D.
Lewis, Harrison F., the Blue-gray Gnatcatcher (*Poliophtila caerulea caerulea*) at Quebec, P. Q., 464; popular nomenclature, 501-503; the Willet (*Catoptrophorus semipalmatus semipalmatus*) in Nova Scotia, 581; breeding of the Semipalmated Plover (*Aegialitis semipalmata*) in Yarmouth County, Nova Scotia, 581; notes on the Acadian Sharp-tailed Sparrow (*Passerherbulus nelsoni subvirgatus*), 587; the Black-poll Warbler and Bicknell's Thrush at Yarmouth, Nova Scotia, 591; song of the Ruby-crowned Kinglet, 594; popular bird names, 634.
Limicolae, 519-540.
Limicola falcinella, 176.
 platyrhyncha, 176.
Limnocinclus, 284.
 acuminatus, 278.
Limnodromus, 442.
 griseus griseus, 442.
 g. scolopaceus, 442.

- Limnotherapia*, 444.
 swainsonii, 445, 589.
Limosa, 285.
 fedoa, 142, 551, 580.
 haemastica, 432.
Linaria, 448.
 caniceps, 300.
 Lincoln, F. C., birds of the Clear Creek district, Colorado, 60-77; the status of Harlan's Hawk in Colorado, 130-131; *Zonothichia albicollis* again in Colorado, 300; a peculiarly marked example of *Dumetella carolinensis*, 593.
 Lloyd, Hoyes, see Fleming, J. H.
Lobipes lobatus, 258, 521.
Lochites, 177.
 Lonnberg, Einar, review of his 'Birds of the Juan Fernandez and Easter Islands,' 615.
 Longspur, Alaska, 71.
 Chestnut-collared, 53.
 Loomis, Leverett M., on *Procellaria alba*, Gmelin, 88-91.
Loon, 258, 286, 542, 567.
Lophodytes cucullatus, 369, 542.
 Louisiana, birds of, 126, 259-260.
Loxia cocothroaustes, 496.
 curvirostra meridionalis, 171.
 c. perna, 298, 456.
 leucoptera, 134, 436, 457, 598.
Lucar, 448.
Lunda, 446.
 McATEE, W. L., abundance of periodical cicadas diverting attacks of birds from cultivated fruits, 144-145; reviews of papers on economic ornithology, 168, 322-325, 483-485, 619-622; the search for food by birds, 341-344; see also Oberholser, H. C.
 McCulloch, J. W., notice of his papers on economic ornithology, 322.
 McGregor, R. C., review of his 'Index to the Genera of Birds,' 471.
Macaw, Hyacinth, 293.
Macedonia, birds of, 611.
Mackenziaena, 177.
Macropygia ruficeps, 633.
 sumatranus, 633.
Machrorhampus, 442.
 griseus griseus, 143, 307, 523, 540.
 scolopaceus, 601, 523.
 Macoun, James Melville, obituary notice of, 346.
Macrosphenus albigula, 492.
 Magee, M. J., Least Flycatcher in Michigan in April, 453.
Magpie, 69, 134, 401.
 Mailliard, Joseph, notice of his 'Notes on the Avifauna of the Inner Coast Range of California,' 156.
 Maine, birds of, 130, 256, 412-422, 462.
 Maitland, R. L., obituary notice of, 640.
Malaconotus, 493.
Mallard, 50, 64, 238, 259, 369, 387, 543.
 Manitoba, birds of, 585.
Mareca americana, 51, 241, 288, 311, 370.
 penelope, 288.
Marila affinis, 51, 244, 277, 354, 369, 431.
 americana, 51, 243, 277, 354, 370.
 collaris, 51, 355, 369, 431.
 ferina americana, 277.
 marila, 354, 370.
 m. affinis, 277.
 valisineria, 51, 244, 252, 355, 370.
 Martin, Purple, 92, 308, 407, 436, 571.
 Maryland, birds of, 551-558, 598.
 Massachusetts, birds of, 78-84, 137, 288, 289, 295, 301, 318, 464, 467, 579, 606.

- Mathews, Gregory M., name of the Red-faced Booby, 180; *Procellaria vittata* Forster is not *Halobaena caerulea* Gmelin, 505-507; review of his 'The Birds of Australia,' 470, 609; review of his 'Check List of the Birds of Australia,' 469.
- Meadowlark, 435, 555, 570.
Western, 52, 70, 405.
- Mecocerculus subtropicalis, 315.
- Megacephalon maleo, 330.
- Megaceryle alcyon, 424-429.
guttata, 424-429.
maxima, 424-429.
torquata, 424-429.
- Megalopterus minutus kermadeci, 345.
m. minutus, 345.
- Megaquiscalus major macrourus, 53.
m. major, 295, 570.
- Melanerpes erythrocephalus, 67, 145.
e. erythrophthalmus, 280.
erythrophthalmus, 145.
formicivorus formicivorus, 52.
- Melanitta, see *Oidemia*.
- Melanopica, 496.
- Melanosterna, 284.
anatheta recognita, 277.
- Meleagris, 440.
gallopavo silvestris, 569.
g. merriami, 397.
- Melipotes ater, 631.
- Mellisuga coccinea, 468.
- Melospiza georgiana, 306, 436, 598.
lincolni lincolni, 72.
melodia, 54, 548.
m. melodia, 548.
m. montana, 72, 406.
- Merganser, 238, 370, 387, 431, 542.
Hooded, 304, 369, 542.
Red-breasted, 50, 304, 370, 388, 431, 568.
- Mergus americanus, 238, 277, 431, 542.
merganser americanus, 277.
serrator, 50, 370, 431, 568.
- Merops spiza, 468.
- Merrem, Blasius, note on his 'Beytrage zur besondern Geschichte der Vogel,' 468.
- Merula, 448.
- Mesia argentauris cunhaci, 170.
- Mesoscolopax, 279.
borealis, 278.
- Micropalama himantopus, 524.
- Micropus peruvianus, 315.
- Microsittace ferrugineus minor, 165.
- Michigan, birds of, 135, 136, 453, 463, 572, 604.
- Migration, 604, 616.
- Migratory bird treaty, 513.
- Miller, Waldron DeW., the genera of Ceryline Kingfishers, 422-429; the summer resident warblers of northern New Jersey, 592; the Hudsonian Chickadee in New Jersey, 593.
- Miller, W. DeW., and Griscom, Ludlow, breeding of the Mourning Dove in Maine, 130; breeding of the Canadian Warbler and Northern Water-Thrush in northern New Jersey, 137; the Bluebird in Cuba, 140.
- Mimus antelius, 175.
lividus, 175.
polyglottos leucopterus, 54, 75, 410.
p. polyglottos, 93, 571.
- Minnesota, birds of, 127, 134, 137, 455, 541-551.
- Mionectes striaticollis columbianus, 315.
- Missouri, birds of, 309, 460, 467.
- Mniotilta varia, 142, 258, 261, 549.
- Mockingbird, 93, 571.
Western, 54, 75, 410.

- Molothrus ater*, 52, 402.
 a. ater, 69, 306, 584.
 badius bolivianus, 628.
Montana, birds of, 132, 451.
Morgan, Brent M., flight of water-fowl at Washington, D. C., 291.
Morinella, 447.
Moris, 441.
 bassana, 441.
Morphnus, 154.
Morris, Robert O., notes from Springfield, Mass., 467.
Motacilla regulus, 496.
Mullens, W. H., Swann, H. Kirke, and Jourdain, F. R. C., review of their 'A Geographical Bibliography of British Ornithology,' 152, 317, 475, 616.
Munia calaminoros, 333.
 punctulata particeps, 631.
Murie, O. J., appearance of the Canada Jay at Moorehead, Minn., 134.
Murphy, Robert C., notice of his 'Sea Coast and Islands of Peru,' 613.
Murrelet, Marbled, 251.
Muscicapa cinereiceps, 320.
 ferruginea, 320, 468.
 parulus, 453.
 sibirica cacabata, 320.
 s. fuliginosa, 320.
Muscylva, 160.
Museum of Vertebrate Zoology of the University of California, endorsement of, 188.
Myadestes townsendi, 77.
Myiagra longicauda, 302.
 townsendi, 159.
Myiarchus crinitus, 144, 295, 570.
 cinerascens cinerascens, 68, 400.
Myioborus bolivianus, 315.
Myiochanes virens, 547.
 richardsoni richardsoni, 68, 401.
Myiodynastes solitarius duncani, 329.
Myrmotherula cinereiventris, 177.
Myzomela rubrata dichromata, 160.

NANNUS, 472.
 alascensis, 283.
 meliger, 283.
 hiemalis helleri, 283.
 h. hiemalis, 283, 550.
 h. pacificus, 283.
 h. semidiensis, 283.
 trogodytes alascensis, 283.
 t. helleri, 283.
 t. hiemalis, 283.
 t. kiskensis, 283.
 t. meliger, 283.
 t. pacificus, 283.
 t. petrophilus, 283.
 t. semidiensis, 283.
 t. tanagensis, 283.
National Association of Audubon Societies, annual report of, 317.
National Parks, bird lists of, 614.
Nebraska, birds of, 476.
Nelson, E. W., report of the chief of the Biological Survey, 167.
Neoglottis, 278.
 flavipes, 278.
 melanoleuca, 278.
Netta, 284.
Nettion carolinense, 51, 64, 241, 284, 306, 307, 369.
 crecca, 252.
 c. carolinense, 284, 311.
Nevada, birds of, 133.
New Hampshire, birds of, 412-422.
New Jersey, birds of, 132, 137, 162, 292, 456, 580, 591, 592, 593, 594.
New Mexico, birds of, 221-247, 273.
New York, birds of, 46-49, 126, 127, 140-142, 298, 299, 302, 306, 307, 449, 452, 456, 461, 466, 581, 598.
Newfoundland, birds of, 292, 298.

- Nichol, M. J., review of his 'Hand-list of the Birds of Egypt,' 81.
 Nichols, John Treadwell, Limicoline voices, 519.
 Nichols, John Treadwell, and Rogers, Charles H., the Marbled Godwit on Long Island, N. Y., 581.
 Nighthawk, 391, 392, 434, 546.
 Western, 68, 400.
 Nomenclature, 145, 147.
 Nonpareil, 300.
 North Carolina, birds of, 130, 149, 257, 565-572.
 North Dakota, birds of, 132, 136, 478.
 Notodula diana sumatrana, 153.
 Nova Scotia, birds of, 581, 582, 583, 587, 591.
 Nucifraga columbiana, 297.
 Numeniinae, 443.
 Numenius hudsonicus, 536.
 tahitiensis, 253.
 Nutcracker, Clarke's, 297.
 Nuthatch, Brown-headed, 572.
 Red-breasted, 142, 305, 310, 438, 550, 571.
 Rocky Mountain, 76, 411.
 Pygmy, 76, 310, 411.
 Nuttall Ornithological Club, annual meeting of, 185.
 Nuttallornis borealis, 68, 435, 466, 546.
 Nyctala, 449.
 Nycticorax nycticorax naevius, 64, 394, 449, 568.
 Nyroca, 284.
 Nystalus maculatus nuchalis, 316.
 OBERHOLSER, H. C., the Hawk Owl in North Dakota, 132; *Empidonax griseus* in Nevada, 133; *Lanius ludovicianus migrans* in North Dakota, 136; fifth annual list of proposed changes in the A. O. U. Check-List of North American Birds, 274-285; *Aeronautes melanoleucus* (Baird) versus *Aeronautes saxatilis* (Woodhouse), 294; a new name for *Phaeochroa* Gould, 295; *Elminia* Bonaparte preoccupied, 302; *Toxostoma crissalis* versus *Toxostoma dorsalis*, 303; *Tringa* Auct. versus *Calidris* Anon., 451; a new name for *Anairetes* Reichenbach, 453; note on the generic name *Schiffornis* Bonaparte and *Scotothorus* Oberholser, 454; *Penthestes hudsonicus hudsonicus* in North Dakota, 463; review of his 'The Status of *Larus hyperboreus barrovianus* Ridgway,' 166.
 Oberholser, H. C., and McAtee, W. L., review of their 'Waterfowl and Their Food Plants in the Sandhill Region of Nebraska,' 476.
 Oberholseria, 444.
 chlorura, 407, 444.
 Ocelletus, 496.
 Ochthodromus, 105.
 wilsonius, 105, 279, 537, 569.
 Oenanthe, 445.
 oenanthe oenanthe, 445.
 o. leucorhoa, 303, 445.
 Ohio, birds of, 287.
 Oidemia americana, 278, 365, 370, 568.
 deglandi, 252, 310, 366, 370, 431.
 d. dixonii, 252.
 nigra americana, 278.
 perspicillata, 366, 370, 432, 568.
 Okefinokee swamp, 347.
 Oldsquaw, 370.
 Oliver, H. K., obituary notice, of 639.
 Olor, 447.
 buccinator, 127.
 columbianus, 289, 432, 467.

- Omaston, A. E., notice of his paper on food of Indian birds, 325.
 Ontario, birds of, 429-439.
 Onychognathus, 493.
 Onychoprion, 284.
 fuscatus, 277.
 'Oologist, The,' reviewed, 170, 327, 487, 623.
 Opopsitta nigrifrons ramuensis, 332.
 Oporornis agilis, 339.
 formosus, 93, 590.
 philadelphia, 137, 550.
 tolmiei, 75.
 Oregon, birds of, 594.
 Oreomanes binghami, 165.
 Oreoscoptes, 75, 410.
 montanus, 410.
 Oreospiza, 414.
 chlorura, 73, 407.
 Oriole, Baltimore, 305, 555.
 Bullock's, 70.
 Orchard, 390, 570.
 Oriolus larvatus reichenowi, 333.
 'Ornis Germanica,' reviewed, 494.
 Ornithological Journals, reviewed, 168-173, 325-334, 485-494, 622-631.
 Ornithological Societies, membership of, 517.
 'Ornithologische Beobachter,' reviewed, 172, 330, 492, 627.
 Ornithologische Monatsberichte, reviewed, 331-333, 492, 630.
 'Ornithologisches Jahrbuch,' reviewed, 173.
 Osgood, W. H., personal mention, 517.
 Osprey, 304, 433, 545, 569.
 Ostinops decumanus, 615.
 d. maculosus, 615.
 Otocoris alpestris enthymia, 69.
 a. leucolaema, 69.
 a. praticola, 435.
 Otus asio aikenii, 66.
 a. maxwelliae, 66.
 Ovenbird, 390, 438, 550.
 Owen, Thomas McAdory, obituary notice of, 510.
 Owl, Aiken's Screech, 66.
 Barn, 308, 467.
 Barred, 49.
 Burrowing, 67, 612.
 Great Horned, 309, 433, 545.
 Hawk, 132.
 Long-eared, 66, 433, 597.
 Northwestern, Horned, 66.
 Richardson's, 447.
 Rocky Mountain Screech, 66.
 Saw-whet, 597.
 Short-eared, 66, 308.
 Western Horned, 67, 399.
 Oxyechus vociferus, 51, 65, 306, 397, 537.
 v. **peruvianus**, 106.
 v. rubidus, 106.
 Oxyura, 446.
 Oyster-catcher, 540, 569.
 Black, 253.
 PACHYCEPHALA moroka, 631.
 olivacea macphersonianus, 625.
 tenebrosa, 631.
 Pachyrhamphus albiloris, 329.
 chapmani, 329.
 costaricensis, 329.
 macconnelli, 329.
 Pagolla wilsonia wilsonia, 279.
 w. beldingi, 279.
 Pagophila alba, 268, 335, 446, 275.
 eburnea, 275, 335, 446.
 Paleornis krameri borealis, 332.
 Palmen, Johan Axel, obituary notice of, 511.
 Palmer, T. S., the thirty-seventh stated meeting of the American Ornithologists' Union, 110-125; complete sets of 'The Auk,' 348-352; obituary notice of Frank Slater Daggett, 508; obituary notice of Charles G. Hewitt, 511;

- obituary notice of Johan Axel Palmen, 511; permanent funds of the A. O. U., 513; annual congress of the Royal Australasian Ornithologists' Union, 516; semicentennial of the discovery of fossil birds in N. A., 516; Swiss Society for the Protection of Birds, 516; birds of national parks, 614; obituary notices of H. H. Smith, 637, N. A. Sarudny, 638, F. W. Headley, 638, H. K. Oliver, 639, J. A. Flanagan, 639, R. L. Maitland, 640.
- Pandion haliaetus carolinensis*, 433, 545, 569.
- Parasula*, 277.
- Partridge, Canada Spruce, 544.
- Parus ater lusitanicus*, 332.
 brunnescens, 332.
 major malayorum, 153.
 palustris balticus, 333.
- Passer domesticus domesticus*, 73, 280, 478, 570, 586.
 d. hostilis, 280.
- Passerculus rostratus*, 175.
 r. guttatus, 285.
 r. halophilus, 281.
 r. sanctorum, 285.
 sandwichensis alaudinus, 53, 71, 405.
 s. savanna, 598, 570.
- Passerella iliaca iliaca*, 72.
- Passerherbulus caudacutus*, 281.
 henslowi, 458, 570.
 lecontei, 281, 299.
 nelsoni subvirgatus, 307, 587.
- Passerina*, 448.
 amoena, 73.
 ciris, 300.
 cyanea, 73, 436.
- Peacock, 385.
- Pearson, T. Gilbert, review of his 'Birds of North Carolina,' 149.
- Pelecanus erythrorhynchus*, 126, 238.
- Pelecanus occidentalis*, 567.
 thagus, 161.
- Pelican, White, 126, 238, 260.
 Brown, 259, 567.
- Pelidna alpina pacifica*, 278.
 sakhalina, 143, 278, 527, 568.
- Pellew, Marion J., and Ford, Louise P., notable warblers breeding near Aiken, S. C., 589.
- Penard, Thomas E., notice of recent papers by, 320; see also Bangs, Outram.
- Penguin, King, 336.
- Pennsylvania, birds of, 155, 176, 303.
- Penthestes atricapillus atricapillus*, 550.
 a. septentrionalis, 76.
 carolinensis agilis, 54.
 c. carolinensis, 488, 572.
 gambeli gambeli, 76, 411.
 hudsonicus hudsonicus, 463, 550, 593.
 h. littoralis, 142, 594.
 h. nigricans, 463, 594.
- Pericrocotus brevirostris*, 489.
 p. pallidus, 489.
 p. saturatus, 489.
 p. styani, 489.
 p. vividus, 489.
 peregrinus, 489.
 speciosus fokiensis, 489.
- Perisoreus canadensis albescens*, 615.
 c. canadensis, 134, 547.
 c. capitalis, 401.
- Perissotriccus ecaudatus miserabilis*, 177.
- Perkins, A. E., notes from Collins, N. Y., 598.
- Pernis celebensis steeri*, 328.
- Peru, birds of, 105-108, 160-161, 165, 613.
- Peters, James L., notice of his 'A New Jay from Alberta,' 615; obituary notice of Barron Brainerd; 184, personal mention, 517.

- Petrel, Leach's, 596.
 Petrella, 446.
 Petrochelidon albifrons hypopolia,
 334.
 lunifrons lunifrons, 73, 143,
 254, 407.
 Pewee, Western Wood, 68, 401.
 Wood, 47, 547, 555.
 Pezophaps solitarius, 337.
 Placelodorus striaticeps griseipe-
 tus, 315.
 Phaeocroa, 295.
 Phaeocrous, 295.
 Phalacrocorax auritus auritus, 306,
 567.
 bougainvillei, 161.
 Phalaenoptilus nuttalli nuttalli, 68.
 Phalarope, Northern, 258, 521.
 Red, 156.
 Wilson's, 396.
 Phasianus soemmerringi interme-
 dius, 477.
 s. subrufus, 477.
 torquatus, 65.
 versicolor kiusiuensis, 477.
 v. robustipes, 477.
 v. tanensis, 477.
 Pheasant, Ring-necked, 65, 392.
 Phœcticus uropygialis terminalis,
 315.
 Phillips, J. C., the American and
 European Widgeons in Massa-
 chusetts, 288; the Whistling Swan
 (*Olor columbianus*) in Massachu-
 setts, 289; habits of the two
 Black Ducks, *Anas rubripes rub-*
 ripes and *Anas rubripes tristis*,
 289.
 Philohela minor, 521.
 Philydor albigularis, 629.
 ochrogaster, 628.
 Phloeotomus pileatus abieticola,
 598, 546.
 Phoebe, 52, 68, 435, 546.
 Say's, 68, 401.
 Phyllastrephus albigularis adamet-
 zi, 333.
 fischeri cognatus, 492.
 kretzschmari, 493.
 placidus munzneri, 333.
 tephrolaemus usambarae, 492.
 zenkeri, 333.
 Pica pica hudsonia, 69, 134, 401.
 Picoides arcticus, 545.
 Picolaptes affinis neglectus, 602.
 Picrites, 177.
 Picus bairdi, 146.
 canus hessei, 332.
 viridis dofeni, 330.
 v. romaniae, 630.
 vittatus eisenhoferi, 332.
 Pigeon, Domestic, 392.
 Passenger, 176, 375, 482.
 Pinarolestes nesiotes, 160.
 Pinicola enucleator leucura, 306,
 308, 436.
 Pintail, 51, 259, 370, 387.
 Pipilo erythrophthalmus erythroph-
 thalmus, 309, 570.
 fuscus aripolius, 169, 281.
 f. carolae, 282.
 f. crissalis, 282.
 f. senicula, 282.
 crissalis carolae, 282.
 c. crissalis, 282.
 c. senicula, 282.
 maculatus arcticus, 54, 72.
 m. maculatus, 72, 406.
 Pipit, Japanese, 251.
 Pipromorpha oleaginea chapmani,
 177.
 o. hauxwelli, 177.
 o. macconnelli, 177.
 o. roraimae, 177.
 o. tobagensis, 177.
 o. wallacei, 177.
 Piranga erythromelas, 143, 282,
 436, 458, 548, 571.
 hepatica, 282.
 h. oreophasma, 282.

- Piranga ludoviciana*, 73, 301, 407.
 olivacea, 282.
 rubra rubra, 570.
- Piscatrix*, 277.
- Pisobia*, 284.
 acuminata, 278, 442.
 aurita, 442.
 cooperi, 278.
 fuscicollis, 526.
 maculata, 447, 525, 543, 568.
 minutilla, 128, 143, 526.
 m. subminuta, 278.
 pectoralis, 447.
 ruficollis, 278.
 subminuta, 278.
- Pitheophaga jeffreyi*, 334.
- Pitta angolensis*, 629.
 atricapillus, 335.
 brachyura beryllifulgens, 332.
 sorsisus, 335.
- Planesticus migratorius migratorius*,
 55, 145, 312, 438, 466.
 m. propinquus, 77, 411.
 serranus cumanensis, 629.
- Planchesia fusca*, 320.
 pullata, 320.
- Plectrophenax hyperboreus*, 254.
- Ploceus*, 493.
- Plover*, Black-bellied, 143, 304, 536,
 569.
 Golden, 537.
 Killdeer, see Killdeer.
 Piping, 84, 537.
 Semipalmated, 143, 496, 537,
 569, 583.
 Wilson's, 53, 537, 569.
- Pluvialis*, 443.
 apricaria, 443.
 dominica dominica, 443.
 d. fulva, 443.
- Pnoepyga pusilla annamensis*, 170.
 p. harterti, 153.
- Podasocys montanus*, 279.
- Podiceps*, 445.
- Podilymbus podiceps*, 50, 63, 235,
 260, 431, 542.
- Poliolaema*, 177.
- Poliolimnas cinereus ingrami*, 177.
- Polionetta albigularis*, 561.
 leucopareus, 561.
- Polioptila caerulea caerulea*, 55, 144,
 438, 464, 572.
- Polyborus cheriway*, 52.
- Pomatorhinus olivaceus annamen-*
 sis, 170.
 tickelli brevirostris, 170.
- Poecetes gramineus confinis*, 53,
 71, 405.
 g. gramineus, 548.
- Poor-will*, 68.
- Porzana carolina*, 64, 432, 543.
 pusilla, 337.
 tabuensis caledonica, 177.
- Potoptera*, 493.
- Prinia flaviventris sindianus*, 625.
 mystacea immutabilis, 488.
 sylvatica, 489.
- Prion vittatus*, 335, 507.
 forsteri, 335.
- Procellaria alba*, 88.
 similis, 507.
 vittata, 505.
- Procelsterna caerulea skottsbergii*,
 616.
- Progne subis subis*, 92, 308, 436, 571.
- Protonotaria citrea*, 144, 261.
- Prunella modularis mabbotti*, 335.
- Pseudacanthia*, 328.
- Pseudochloris uropygialis connec-*
 tens, 165.
 olivascens sordida, 165.
- Pseudocolaptes boissonneautii me-*
 dianus, 630.
- Pseudoconopophaga*, 177.
- Pseudogeranus leucauchen*, 338.
- Pseudominla atriceps*, 170.
- Pseudosiptornis*, 164.
- Pseudospermestes microrhyncha*,
 333.
- Pseudotadorna cristata*, 490.
- Pternistes*, 493.

- Pterocles lichtensteini abessinicus*, 332.
 l. targius, 332.
Pterodroma, 441, 449.
 heraldica paschae, 616.
 rostrata trouessarti, 177.
Pterythrur oeralatus annamensis, 170.
Puffin, 596.
Puffinus borealis, 149.
 tenuirostris, 251.
Pycnonotus bimaculatus barat, 633.
 leucotis mesopotamiae, 178.
 xanthopygos palaestinae, 333.
Pycnorhinus, 496.
Pyrrhula uchidai, 178.

QUERQUEDULA cyanoptera, 242.
 discors, 64, 241, 369.
 d. albinucha, 277.
Quiscalus quiscula aeneus, 70, 547.
 q. ridgwayi, 280.
 q. versicolor, 280.

RAIL, Black, 128.
 King, 432.
 Virginia, 64, 394, 432, 452.
Rallus elegans, 306, 432.
 longirostris helius, 631.
 virginianus, 64, 394, 432, 452.
Raphus cucullatus, 337.
Rathbun, S. F., White Gyrfalcon (*Falco islandus*) in Montana, 132;
 Bohemian Waxwing at Seattle, Washington, during the winter of 1919-20, 458-460.
Raven, 391, 401, 453, 597, 558.
Redhead, 51, 243, 259, 354, 370.
Redpoll, 70, 80, 305, 600.
Redstart, 75, 142, 163, 305, 550, 557, 597.
Regillus, 448.
Regulus, 448.
 calendula, 85.
 c. calendula, 55, 76, 438, 572, 594.
 Regulus satrapa satrapa, 54, 77, 551.
 'Revue Francaise d Ornithologie,' reviewed, 172, 330, 491, 627.
Rhipidura lessoni, 160.
Rhodostethia rosea, 268.
 r. hartlaubi, 629.
Rhopias fulviventris salmoni, 177.
Rhynchocyclus
 flaviventris gloriosus, 489.
 f. collingwoodi, 489.
 poliocephalus inquisitor, 489.
 sulphurascens examinatus, 489.
Ridgway, Robert, comment on his 'Birds of North and Middle America,' Vol. VIII, 344-345.
Rimator danjoui, 170.
Riparia paludicola chinensis, 335.
 p. sinensis, 335.
 riparia, 73.
Rissa tridactyla, 268.
 brevirostris, 268.
Road-runner, 52.
Roberts, Prewitt, notes on winter birds of the Missouri Ozarks, 309.
Robin, 597.
Robinson, H. C., and *Kloss, C.*
 Boden, review of their 'Birds of the Expedition to Korinchi Peak, Sumatra,' 153.
Rowan, Wm., popular nomenclature, 499-501; breeding of the Evening Grosbeak in Manitoba, 585.
Rowan, William, *Wolf, E.*, and *Sulman, P. L.*, review of their 'On the Nest and Eggs of the Common Tern,' 479.
Royal Australasian Ornithologists' Union, annual meeting of, 515, 641.
Rubecula, 449.
Rynchops nigra, 335, 567.

SACTHTLEBEN, H., notice of his paper on 'Geographic Forms of Goldfinches,' 481.

- Sakesphorus, 177.
 Salpinctes guadaloupensis, 282.
 g. proximus, 282.
 obsoletus, 54, 76.
 o. guadeloupensis, 282.
 o. obsoletus, 76, 410.
 o. proximus, 282.
 Sanderling, 78, 432, 529, 568.
 Sandpiper, Least, 128, 143, 260,
 526, 543, 568.
 Pectoral, 304, 525.
 Red-backed, 78, 143, 527, 568.
 Semi-palmated, 128, 260, 390,
 527.
 Solitary, 128, 432, 534, 544.
 Spotted, 65, 260, 396, 535, 544,
 557, 569, 596.
 Stilt, 524.
 Western, 528.
 Western Solitary, 64.
 White-rumped, 526.
 Sapsucker, Red-naped, 67.
 Yellow-bellied, 52, 546, 556.
 Williamson's, 67, 399.
 Sarothrura somereni, 328.
 Sarudny, N. A., obituary notice of,
 638.
 Sathrocercus, 493.
 Saunders, A. A., ornithological pro-
 nunciation, 181; the color of natal
 down in passerine birds, 312;
 birds and tent caterpillars, 312.
 Saunders, W. E., additional notes
 on the birds of Red Deer, Al-
 berta, 304-306.
 Saunders, W. E., and Fleming,
 J. H., A. O. U. luncheons, 498.
 Sauropatis sacra rabulata, 159.
 s. celata, 159.
 Saxicola, 445.
 oenanthe leucorhoa, 303.
 pyrrhonotus, 629.
 Sayornis phoebe, 52, 68, 435, 546.
 sayus, 68, 401.
 Scaephaethon, 160, 284.
 Scaephaethon rubricatus, 277.
 r. rothschildi, 277.
 Scardafella inca, 51.
 Scaup, see Duck, Scaup.
 Schiffornis, 454.
 Schorger, A. W., bird notes on the
 Wisconsin River, 143-144.
 Selater, W. L., review of his 'Aves'
 in the Zoological Record, 611;
 personal mention, 187.
 Scolopacidae, 442.
 Scolopacinae, 442.
 Scoter, 365, 370, 568.
 Surf, 366, 370, 432, 568.
 White-winged, 310, 366, 370,
 431.
 Western White-winged, 252.
 Scotothorus, 454.
 Scott, W. E. D., see Sharpe, R.
 Bowdler.
 Scoville, S., Jr., review of his 'The
 Out-of-Doors Club,' 162.
 Seiurus aurocapillus, 438, 550.
 motacilla, 93, 554, 590.
 noveboracensis, 93, 554, 592.
 n. notabilis, 75, 93, 409, 550.
 Selasphorus platycercus, 68, 400.
 Serinus caniceps, 300.
 dorsostratus harterti, 333.
 hartlaubi, 300.
 Serpophaga helenae, 329.
 Setochealcis noctitherus, 334.
 Setophaga ruticilla, 75, 142, 550.
 Sharpe, R. Bowdler, and Scott,
 W. E. D., notice of their 'Orni-
 thology of the Princeton Pata-
 gonian Expedition,' 480.
 Shearwater, Slender-billed, 251.
 Sherman, Althea R., notice of her
 'Historical Sketch of the Park
 Region about McGregor, Iowa,
 and Prairie DuChien, Wiscon-
 sin,' 482.
 Shoveller, 51, 64, 242, 259, 307,
 369.

- Shrike, Northern, 74.
 Migrant, 136.
 White-rumped, 54, 74.
- Shufeldt, R. W., note on the food of the Starling, 135; notice of his paper on the 'Birds of Brazil,' 167; notice of his 'Complete List of My Published Writings,' 321, 613; a change in the nesting habits of the common House Sparrow (*Passer domesticus*), 586.
- Smicrornis brevirostris mallee, 609.
- Smith, Austin Paul, observations relative to some Costa Rican birds, 601-603.
- Smith, H. H., obituary notice of, 637.
- Sialia currucoides, 55, 77, 411.
 mexicana bairdi, 77, 310, 411.
 sialis sialis, 55, 77, 140, 572.
- Sigmodus scopifrons, 493.
- Siptornis, 164.
 anthoides, 164.
 berlepschi, 628.
 flammulata, 164.
 ottonis, 164.
 punensis rufala, 165.
 urubambensis, 165.
- Siptornoides, 164.
- Siskin, Pine, 71, 307, 405, 548.
- Sitta canadensis, 142, 310, 438, 550, 571.
 carolinensis nelsoni, 76, 411.
 europaea atlas, 328.
 e. cisalpina, 630.
 e. griseiventris, 624.
 pusilla, 571.
 pygmaea pygmaea, 73, 310, 411.
- Sittasomus griseicapillus reiseri, 628.
- Siva sordida orientalis, 170.
- Skimmer, Black, 126, 567.
- Snipe, Robin, see Knot.
- Snipe, Surf, see Sanderling.
 Wilson's, 64, 392, 522, 543.
- Solitaire, Townsend's, 77.
- Somateria molissima islandica, 277.
 m. v-nigra, 277.
 spectabilis, 618.
 v-nigra, 277.
- Song, 519, 584.
- Sora, 64, 432, 543.
- Soroplex campestris cearae, 316.
- South African Ornithologists' Union amalgamation with the Transvaal Biological Society, 187.
- 'South Australian Ornithologist,' reviewed, 172, 330, 490, 627.
- South Carolina, birds of, 92-94, 302, 462, 465, 589.
- Sparrow, Acadian Sharp-tailed, 307, 587.
 Baird's, 305, 457.
 Black-throated, 54.
 Brewer's, 72, 406.
 Chipping, 53, 548, 555, 570.
 Clay-colored, 72, 300, 601.
 English, 73, 383.
 Field, 555, 570.
 Fox, 72.
 Gambel's, 71, 299.
 Grasshopper, 141.
 Harris's, 53, 71, 135, 586.
 Henslow's, 251, 393, 458, 570.
 Leconte's, 299.
 Lincoln's, 72.
 Mountain Song, 72, 406.
 Rock, 54.
 Sage, 406.
 Savannah, 258, 391, 597, 598, 570.
 Song, 54, 390, 548, 555.
 Swamp, 305, 436, 598.
 Tree, 467, 548.
 Vesper, 391.
 Western Chipping, 72, 406.
 Western Field, 53.
 Western Grasshopper, 71.

- Sparrow, Western Lark, 53, 71, 405.
Western Savannah, 63, 71, 405.
Western Tree, 71.
Western Vesper, 53, 71, 405.
White-crowned, 53, 71, 135,
299, 406.
White-throated, 53, 300, 314,
393, 406, 548, 570, 597.
- Spatula clypeata, 51, 64, 242, 307,
369.
- Speotyto cunicularia hypogaea, 67.
- Spheniscus humboldti, 161.
- Sphenocercus pseudo-crocopus, 332.
- Sphyrapicus thyroideus, 67, 399.
varius nuchalis, 67.
v. varius, 52, 306, 546.
- Spilornis cheela ricketti, 328.
kinabaluensis, 328.
palawanensis, 328.
- Spinus, 285.
pinus, 71, 254, 307, 405, 548.
- Spizaetus africanus, 321.
batesi, 321.
napalensis fokiensis, 328.
- Spiza americana, 601.
- Spizella arborea, 175, 281.
a. ochracea, 281.
breweri, 72, 406.
monticola, 281, 548.
m. monticola, 467.
m. ochracea, 71.
passerina, 53.
p. arizonae, 72, 406.
p. passerina, 548, 570.
pallida, 72, 300, 601.
pusilla arenacea, 53.
p. pusilla, 570.
- Spizitornis**, 453.
- Spoonbill, Roseate, 568.
- Squatarola squatarola, 143, 279,
536, 569.
s. cynosurae, 279.
- Stachyris nigriceps dilutus, 170.
- Stactocichla merulina anamensis,
170.
- Starling, 135, 298, 598.
- Steganopus tricolor, 396.
- Stelgidopteryx serripennis, 73, 408,
436, 571.
- Stephenson, Mrs. Jesse, the Even-
ing Grosbeak in Monte Vista,
Colo., 299.
- Sterna anaetheta recognita, 277.
antillarum, 567.
caspia, 307, 446.
dougalli, 579.
fluviatilis, 479.
forsteri, 63.
fuscata, 277.
hirundo, 307.
maxima, 567.
tschegrava, 446.
- Sternidae, 276.
- Stipiturus malachurus halmaturina,
490.
- Stilt, Black-necked, 396.
- Stone, Clarence F., some rare birds
for Yates Co., N. Y., 466.
- Stone, H. F., Purple Gallinule in
North Carolina, 130.
- Stone, Witmer, supplementary note
on J. P. Giraud, 146; age attained
by the Hyacinth Macaw, 293;
the Wheatear (*Oenanthe oenanthe
leucorhoa*) in eastern Pennsyl-
vania, 303; Merrem's 'Beytrage,'
468; notice of his 'Ornithology
of the Princeton Patagonian Ex-
pedition,' 480; on A. O. U. lunch-
eons, 498; popular nomenclature,
503-505; the Louisiana Heron
(*Hydranassa tricolor ruficollis*) at
Cape May, N. J., 580; the Mar-
bled Godwit (*Limosa fedoa*) on
the New Jersey coast, 580; the
Yellow-throated Warbler (*Den-
droica dominica dominica*) at
Cape May, N. J., 591.
- Stoner, Dayton, American Golden-
eye and White-crowned Sparrow

- in northern Michigan in summer, 135-136; unusual winter bird records for Iowa City, Iowa, 308-309.
- Stoparola melanops*, 335.
- thalassina*, 335.
- Stresemann, Erwin, notice of his papers on *Aegithalos* and Bullfinches, 166; review of his 'Avifauna Macedonica,' 611.
- Stuart, George H., 3rd, nesting of the Greater Yellow-legs in Newfoundland, 292; nesting of the Little Black Rail in Atlantic County, N. J., 292.
- Sturnella magna magna*, 435, 570.
- neglecta*, 52, 70, 405.
- Sturnus vulgaris*, 135, 298, 598.
- Suaheliornis*, 493.
- Sula bassana*, 431.
- cyanops*, 441.
- dactylatra*, 441.
- longipennis*, 337.
- sula*, 337.
- variegata*, 161.
- Sulman, P. L., see Rowan, W.
- Sumatra, birds of, 153.
- Surnia ulula caparoch*, 132.
- Surniculus stewarti*, 531.
- Swales, Bradshaw H., Hooded Warbler (*Wilsonia citrina*) at Detroit, Michigan, 463.
- Swallow, Bank, 73.
- Barn, 73, 163, 407, 571, 597.
- Cliff, 73, 143, 254, 407.
- Northern Violet-green, 73, 407.
- Rough-winged, 73, 408, 436, 571.
- Tree, 261, 305, 597, 598, 548, 571.
- Swan, Trumpeter, 127.
- Whistling, 127, 289, 432, 467.
- Swann, H. Kirke, review of his 'A Synoptical List of the Accipitres,' 154, 321, 475; see also Mullens, W. H.
- Swarth, Harry S., races of *Branta canadensis*, 268-272; birds of the Papago Saguaro National Monument, Arizona, 640.
- Swift, Chimney, 48, 132, 570.
- White-throated, 68, 294, 400.
- Swiss Society for the Study of Birds, note on, 641.
- Sylvietta carnapi dilutior*, 332.
- isabellina macrorhyncha*, 488.
- neumanni*, 631.
- Synallaxis stictothorax piurae*, 315.
- TACHYCINETA *thalassina lepida*, 73, 407.
- Tachyphonus metallicus*, 335.
- rufiventris*, 335.
- Tachytiorchis*, 280.
- albicaudatus sennetti*, 280.
- Tanager, Scarlet, 143, 436, 458, 548, 571, 597.
- Summer, 597, 571.
- Western, 73, 301, 407.
- Tanagra ehrenreichi*, 331.
- coelestis*, 331.
- Tangara cyanicollis gularis*, 165.
- lutleyi*, 628.
- violacea rodwayi*, 320.
- Tanysiptera nigricaps leucura*, 332.
- Tattler, Polynesian, 250.
- Taverner, P. A., review of his 'Birds of Eastern Canada,' 147-149; obituary notice of James M. Macoun, 346.
- Taylor, Warner, some sparrow notes from Madison, Wisconsin, 299.
- Teal, Andaman, 561.
- Blue-winged, 64, 126, 241, 369.
- Cinnamon, 242.
- European, 252.
- Falcated, 250.
- Green-winged, 51, 64, 241, 259, 307, 311, 369.
- Southern, 558.

- Teal, plumage patterns of, 558-564.
Telmatodytes palustris palustris, 306.
 p. plesius, 76, 411.
Tephrodornis pelvica, 633.
 p. annectens, 153.
Tern, Black, 64, 238.
 Caspian, 260, 307.
 Common, 259, 260, 304, 307, 479, 596.
 Forster's, 63, 260.
 Least, 567.
 Roseate, 579.
 Royal, 259, 260, 567.
Texas, birds of, 49-55.
Thalasoetus pelagicus, 250, 280.
Thalasseus, 440.
Thalassidroma, 441.
Thamnophilus leachi, 177.
 viridis, 177.
Thrasher, Brown, 76, 438, 555, 571.
 Curve-billed, 54.
 Sage, 75, 410.
Threskiornithidae, 441.
Thripobrotus layardi madeirae, 315.
 warszewiczi bolivianus, 315.
Thrush, Alaskan Hermit, 77.
 Audubon's Hermit, 77.
 Bicknell's, 591.
 Gray-cheeked, 156, 254.
 Hermit, 48, 55, 138, 393, 551, 598.
 Russet-backed, 465.
 Olive-backed, 77, 306, 597, 551.
 Willow, 77.
 Wood, 48, 258, 572.
Thryomanes, 487.
 albinuchus, 487.
 bewicki ariboreus, 487.
 b. catalinae, 487.
 b. cryptus, 54.
Thryospiza mirabilis, 281.
Thryothorus ludovicianus ludovicianus, 54, 144, 438, 571.
Tinnunculus rupicolus rhodesi, 624.
Titmouse, Plain, 594.
 Sennett's, 54.
 Tufted, 572.
Todd, W. E. C., a revision of the genus *Eupsychortyx*, 189-220.
Todirostrum beckeri, 108.
 sylvia griseolum, 108.
 schistaceiceps, 108.
Todopsis kowaldi, 624.
'Tori,' reviewed, 490.
Totanus flavipes, 64, 143, 530, 540, 453.
 melanoleucus, 64, 292, 529, 543.
 totanus, 432.
Towhee, 309, 383, 570.
 Arctic, 54, 72.
 Spurred, 72, 406.
 Green-tailed, 73, 407.
Townsend, Charles H., and Wetmore, Alexander, review of their 'Birds of the Albatross Expedition, 1899-1900,' 159-160.
Townsend, Charles W., courtship in birds, 380-393; the Willet in Nova Scotia, 582; review of his 'Supplement to Birds of Essex County, Massachusetts,' 606.
Toxostoma crissale, 303.
 curvirostre curvirostre, 54.
 dorsalis, 303.
 redivivum pasadenense, 285.
 r. redivivum, 285.
 rufum, 76, 438, 571.
Tringa, 443.
 calidris, 452.
 canutus, 337, 451, 406, 525.
 ocropus, 443, 447.
 ocropus, 447.
 solitaria cinnamomea, 443.
 s. solitaria, 443.
Tringinae, 443.
Trochalopteron yersini, 170.
Trochilus cuvierii, 295.

- Troglodytes aedon aedon*, 550, 571.
 ae. parkmani, 76, 411.
 musculus bonariae, 630.
Turdinulus epilepidotus clarus, 170.
Turdus aureus angustirostris, 332.
 auritus, 630.
 citrinus courtoisi, 329.
 iliacus, 449.
 mupinensis, 630.
 musicus, 449.
 sordidus, 335.
 Turkey, Merriam's, 397.
 Wild, 557, 568.
 Turnstone, Ruddy, 143, 538.
 Turtur turtur hoggara, 332.
 Tyler, Winsor M., the Cowbird's
 whistle, 584.
Tympanuchus cupido, 335.
Tyrannus tyrannus, 68, 144, 310,
 435, 546, 570.
 verticalis, 68, 142.
 vociferus, 400.
 Tyto, 444.
 U. S. Biological Survey, notice of
 annual report of, 167; notice of
 its migration work, 185; assump-
 tion of bird banding work, 512.
Upucerthia dabbenei, 165.
 dumetoria hallinani, 165.
Uria ringvia, 275.
Urubitornis solitarius, 154.
 VAN CLEAVE, H. J., review of his
 'Acanthocephala of the Canadian
 Arctic Expedition,' 618.
 Van Oort, E. D., notice of his
 'Birds of Holland,' 147, 320.
Vavasouria, 489.
 Veery, 48.
Veniliornis kirkii monticola, 629.
Vermivora bachmani, 103.
 celata celata, 54, 74, 137, 409.
 c. lutescens, 74, 310.
 chrysoptera, 141.
 peregrina, 437, 549.
Vermivora pinus, 141, 142, 462.
 leucobronchialis, 141.
 rubricapilla, 445.
 r. rubricapilla, 142, 437.
 ruficapilla, 445, 592.
 r. ruficapilla, 445.
 r. gutturalis, 445.
 virginiae, 74, 408.
 Vermont, birds of, 412-422.
 Vetola, 285.
Vibrissosylvia, 493.
 Victoria Museum, Ottawa, bird col-
 lection of, 186.
Vireo, Blue-headed, 386, 387, 549,
 571.
 Philadelphia, 437.
 Plumbeous, 74, 408.
 Red-eyed, 74, 258, 549, 555,
 571.
 Western Warbling, 74, 408.
 White-eyed, 571.
Vireo griseus griseus, 571.
Vireosylva gilva swainsoni, 74, 408.
 olivacea, 74, 258, 549, 571.
 philadelphica, 437.
 Virginia, birds of, 456, 579.
 Vulture, Black, 51, 260.
 Turkey, 51, 56, 397, 544, 557,
 569.
 WALLACE, J. H., notice of his 'Ala-
 bama Bird-day Book,' 482.
 Warbler, Audubon's, 75, 85, 409.
 Bachman's, 103, 574.
 Bay-breasted, 143, 437, 576.
 Black and White, 142, 258, 261.
 Black-poll, 438, 576, 591, 597.
 Black-throated Blue, 93, 142,
 261, 549, 592, 598.
 Black-throated Green, 47, 142,
 576, 598.
 Blackburnian, 142, 438, 550,
 553, 576, 592.
 Blue-winged, 141, 142, 462,
 574, 597.

- Warbler, Brewster's, 14, 155, 597.
Cairns's, 93.
Canada, 48, 75, 137, 438, 553,
593, 597.
Cape May, 258, 437, 576.
Calaveras, 574.
Cerulean, 437, 576, 598.
Chestnut-sided, 48, 549, 554,
577.
Connecticut, 339, 575.
Dusky, 574.
Grace's, 409.
Golden-winged, 141, 554, 574.
Hooded, 142, 463, 557, 590.
Kentucky, 93, 575, 590.
Kirtland's, 577.
Lawrence's, 155.
Lucy's, 574.
Lutescent, 74, 310, 574.
MacGillivray's, 75, 575.
Magnolia, 142, 437, 549, 553,
576.
Mourning, 137, 550, 575.
Myrtle, 47, 54, 74, 258, 261,
386, 437, 549, 571, 576, 597.
Nashville, 142, 437, 574, 592,
597.
Northern Parula, 42, 462, 598.
Orange-crowned, 54, 74, 131,
574.
Parula, 47, 137, 258, 261, 313,
409.
Pileolated, 75, 410.
Pine, 258, 438, 550, 557, 571,
577.
Prairie, 141, 258, 601, 571, 557,
577.
Prothonotary, 144, 261, 590.
Swainson's, 589.
Tennessee, 305, 437, 549, 574.
Townsend's, 75.
Virginia's, 74, 408, 574.
Worm-eating, 557.
Wilson's, 438.
- Warbler Yellow-throated, 258, 302,
571, 577, 590.
Yellow Palm, 258, 576.
Yellow, 74, 409, 554, 571, 576,
577, 597, 598.
Warsanglia, 328.
johannis, 328.
Washington, birds of, 459-460.
Water-Thrush, 137, 554, 592.
Grinnell's, 75, 93, 408, 550.
Louisiana, 93, 302, 590.
Northern, 137.
Watson, J. D., Lewis, G. P., and
Leopold, N. F., Jr., notice of
their 'Spring Migration Notes of
the Chicago Area,' 616.
Waxwing, Bohemian, 73, 136, 137,
301, 458, 460, 461, 600.
Cedar, 54, 549.
Wayne, Arthur T., notes on seven
birds taken near Charleston, S.
Carolina, 92-94; the Louisiana
Water-Thrush breeding at Gran-
iteville, Aiken County, South
Carolina, 302; the Blue-winged
Warbler (*Vermivora pinus*) on
the coast of South Carolina, 462;
the Russet-backed Thrush taken
near Charleston, S. C., 465;
Wellman, Gordon Boit, dance of
the Purple Finch, 584.
West Virginia, birds of, 457.
Wetmore, Alexander, observations
on the habits of birds at Lake
Burford, New Mexico, 221-247,
393-412; intestinal caeca in the
Anhinga, 286; the Knot in Mon-
tana, 451; the Newfoundland
Crossbill in the Washington re-
gion, 456; an erroneous Kansas
record for Baird's Sparrow, 457;
personal mention, 517; see also
Townsend, C. H.
Wheatear, 33.

- Whip-poor-will, 293, 546, 554, 570.
 Whistler, see Golden-eye.
 White, F. B., memorial of the
 Nuttall Ornithological on the
 death of William Brewster, 27-
 28.
 White, Gilbert, memorial to, 641.
 Widgeon, European, 288.
 Willet, 581, 582, 534, 568.
 Western, 65, 396.
 Williams, John, the Black Rail at
 St. Marks, Florida, 128-130;
 notes from St. Marks, Florida,
 142-143.
 Wilson, Alexander, 174.
 'Wilson Bulletin,' reviewed, 169,
 487.
 Wilson Ornithological Club, annual
 meeting of, 352.
 Wilsonavis richmondi gouldiana,
 609.
 Wilsonia canadensis, 75, 438.
 citrina, 142, 463.
 pusilla pileolata, 75, 410.
 p. pusilla, 438.
 Wisconsin, birds of, 143-144, 299,
 367-371.
 Witherby, H. F., review of his
 'Handbook of British Birds,' 151-
 152, 316, 472.
 Wolf, E., see Rowan, W.
 Wood, Casey A., review of his
 'The Eyes of the Burrowing Owl,'
 612.
 Woodcock, 392.
 Woodpecker, Ant-eating, 52.
 Arctic Three-toed, 545.
 Batchelder's, 67.
 Downy, 67, 556, 569.
 Golden-fronted, 52.
 Hairy, 399, 545, 556.
 Lewis's, 68.
 Northern Pileated, 546, 598.
 Pileated, 132.
 Red-bellied, 143, 569.
 Woodpecker, Red-cockaded, 569.
 Red-headed, 67, 556.
 Rocky-Mountain Hairy, 67.
 Southern Downy, 569.
 Texas, 52.
 Wren, Alaska, 486.
 Bewick's, 309, 555.
 Canon, 76, 410.
 Carolina, 54, 144, 438, 571.
 House, 314, 550, 555, 571.
 Long-billed, 308.
 Rock, 54, 76, 410.
 Texas, 54.
 Western House, 76, 411.
 Western Marsh, 76, 411.
 Winter, 550, 597.
 Wright, A. H., the Yellow-throated
 Warbler in central New York,
 302.
 Wright, Horace W., Hermit
 Thrush's nest in unusual loca-
 tion, 138; Bittern displaying its
 white nuptial plumes, 450; Blue-
 gray Gnatcatcher in the Boston
 Public Garden, 464; obituary no-
 tice of, 509.
 XANTHISCUS flavescens sordidus,
 170.
 Xanthocephalus xanthocephalus,
 69, 403, 601.
 Xema sabini, 268, 311.
 Xenops rutilus connectens, 315.
 Xiphorhynchus triangularis bangsi,
 315.
 YELLOWLEGS, 64, 143, 260, 530,
 540, 543.
 Lesser, see Yellow-legs.
 Greater, 64, 260, 292, 529, 543,
 571.
 Yellow-throat, Maryland, 258, 390,
 550, 575 597.
 Western, 75, 410, 575.
 Florida, 575.

- Yellow-throat, Pacific, 575.
Salt Marsh, 575.
San Blas, 575.
Jalapa, 575.
- ZAMELODIA ludoviciana, 436, 548.
melanocephala, 73, 407.
m. capitalis, 282.
m. melanocephala, 282.
- Zenaidura macroura carolinensis,
51.
- Zenaidura m. marginella, 65, 397.
Zonotrichia albicollis, 53, 300, 406,
548.
leucophrys, 299, 406.
l. gambeli, 71, 299.
l. leucophrys, 53, 71, 136.
querula, 53, 71, 135.
Zosterops bayeri, 496.
difficilis, 153.

ERRATA.

- Page xii, line 33, for VAN ORT read VAN OORT.
" xl, " 16, for LUTLEY read LUTLEY.
" 21, " 5, for McCLEOD read McLEOD.
" 21, " 7, for FRAZER read FRAZAR.
" 27, " 13 from bottom, for E. B. WHITE read F. B. WHITE.
" 175, " 10, for June read April.
" 351, " 3 from bottom, for *Public Library read *H. H. Bailey.
" 471, " 16 from bottom, for 1865 read 1857.
" 492, " 11, for use of and read use of > and <.
" 505, " 15, for what read that.
" 508, " 10, for 1895 read 1894.
" 508, " 12, for 1912 read 1910.
" 515, " 19 from bottom, for Australian read Australasian.

DATES OF PUBLICATION.

- Vol. XXXVI, No. 4—October 31, 1919.
" XXXVII, No. 1—January 20, 1920.
" XXXVII, No. 2—April 15, 1920.
" XXXVII, No. 3—July 14, 1920.

I have been thinking of you very much lately
and wondering how you are getting on.
I hope you are well and happy.
I have been very busy lately
but I have managed to find some time
to write you a few lines.
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THE AUK

A Quarterly Journal of Ornithology

ORGAN OF THE AMERICAN ORNITHOLOGISTS' UNION

Edited by Dr. Witmer Stone

ACADEMY OF NATURAL SCIENCES, LOGAN SQUARE,
PHILADELPHIA, PA.

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Manuscripts for leading articles must await their turn for publication if others are already on file, but they must be in the editor's hands at least six weeks before the date of issue of the number for which they are intended, and manuscripts for 'General Notes,' 'Recent Literature,' etc., not later than the first of the month preceding the date of issue of the number in which it is desired they shall appear.

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THE OFFICE OF PUBLICATION

8 WEST KING STREET, LANCASTER, PA.

Subscriptions may also be sent to DR. JONATHAN DWIGHT, Business Manager, 43 West 70th St., New York, N. Y. Foreign Subscribers may secure 'The Auk' through Witherby & Co., 326 High Holborn, London, W. C.

Subscription, \$3.00 a year. Single numbers, 75 cents.

Free to Honorary Fellows, and to Fellows, Members, and Associates of the A. O. U., not in arrears for dues.

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MEETINGS OF THE American Ornithologists' Union

Since its organization in 1883 the American Ornithologists' Union has held one special and 36 annual meetings.

The number of Fellows (known as Active Members prior to 1902) has always been limited to 50 and the number present at any meeting has varied from 7 to 28. The attendance of other classes of members in recent years averages over 100.

Meeting	Date	Place	Fellows Present	Total Membership
1	1883, Sept. 26-28	1st New York	21	23
2	1884, Sept. 30-Oct. 2	2d New York	16	143
3	1885, Nov. 17-18	3d New York	16	201
4	1886, Nov. 16-18	1st Washington	20	251
5	1887, Oct. 11-13	1st Boston	17	284
6	1888, Nov. 13-15	2d Washington	20	298
7	1889, Nov. 12-15	4th New York	20	400
8	1890, Nov. 18-20	3d Washington	20	465
9	1891, Nov. 17-19	5th New York	14	493
10	1892, Nov. 15-17	4th Washington	20	557
11	1893, Nov. 20-23	2d Cambridge	17	582
12	1894, Nov. 12-15	6th New York	15	616
13	1895, Nov. 11-14	5th Washington	19	667
14	1896, Nov. 9-12	3d Cambridge	14	673
15	1897, Nov. 8-11	7th New York	18	679
16	1898, Nov. 14-17	6th Washington	21	695
17	1899, Nov. 13-16	1st Philadelphia	16	744
18	1900, Nov. 12-15	4th Cambridge	19	748
19	1901, Nov. 11-14	8th New York	18	738
20	1902, Nov. 17-20	7th Washington	25	753
20a	1903, May 15-16	1st San Francisco	7	—
21	1903, Nov. 16-19	2d Philadelphia	19	775
22	1904, Nov. 28-Dec. 1	5th Cambridge	17	808
23	1905, Nov. 13-16	9th New York	17	860
24	1906, Nov. 12-15	8th Washington	24	750
25	1907, Dec. 9-12	3d Philadelphia	20	850
26	1908, Nov. 16-19	6th Cambridge	17	888
27	1909, Dec. 6-9	10th New York	19	866
28	1910, Nov. 14-17	9th Washington	23	897
29	1911, Nov. 13-16	4th Philadelphia	18	887
30	1912, Nov. 11-14	7th Cambridge	18	929
31	1913, Nov. 10-13	11th New York	28	992
32	1914, Apr. 6-9	10th Washington	27	1101
33	1915, May 17-20	2d San Francisco	11	1156
34	1916, Nov. 13-16	5th Philadelphia	26	830
35	1917, Nov. 12-15	8th Cambridge	21	891
36	1918, Nov. 11	12th New York	14	953
37	1919, Nov. 10-13	13th New York	28	1024

The next regular meeting—the 38th Stated—will be held at Washington, D. C., November 8-11, 1920.

